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A SECOND BOOK OF ARCHÆOLOGY

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A BOOK OF ARCHÆOLOGY

A SECOND BOOK OF ARCHÆOLOGY

selected and edited by

MARGARET WHEELER



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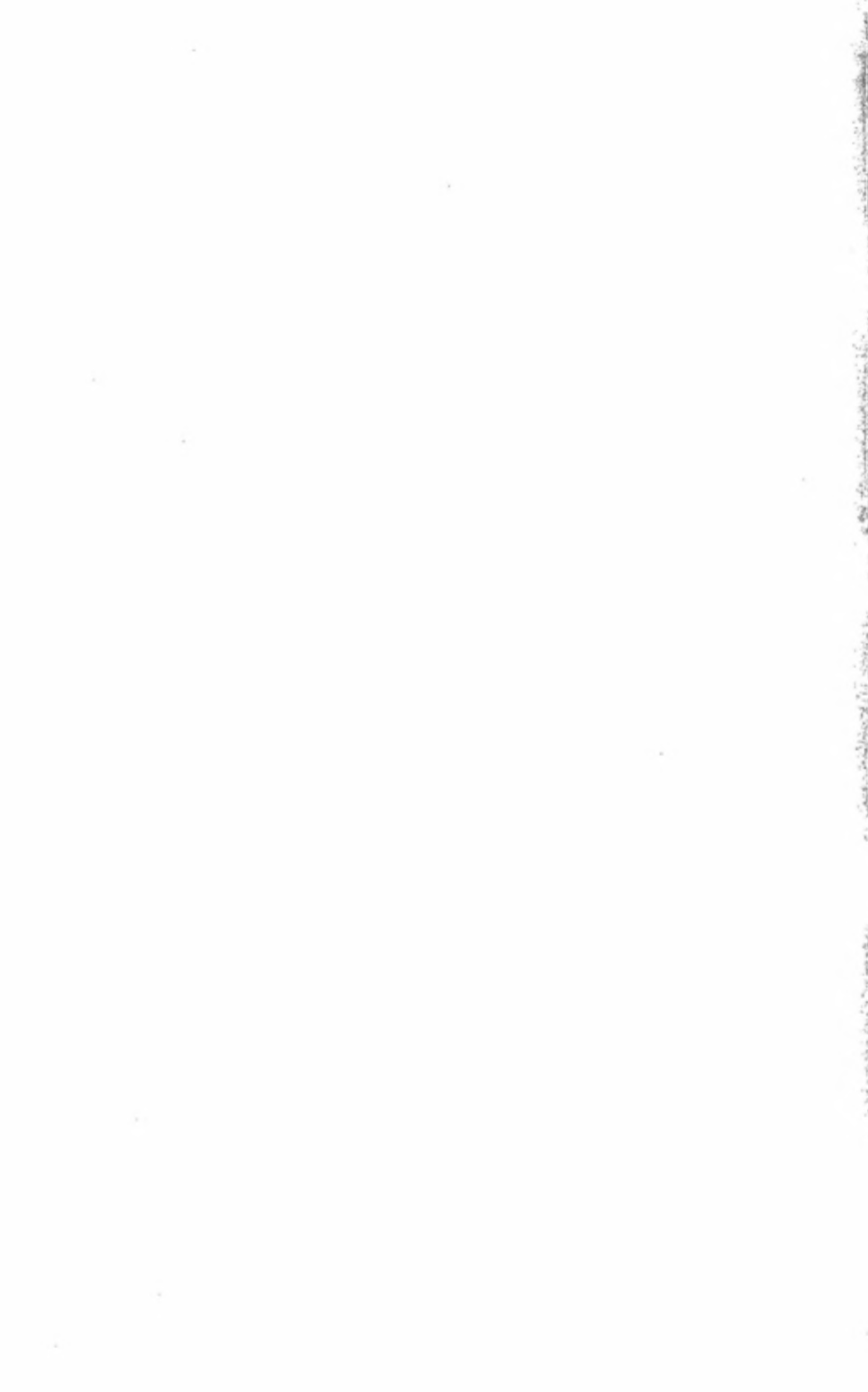
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· FOR MY SISTER
JOY



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A collection of dragons' teeth, second-rate quality, from a Chinese chemist in Hong Kong (*Prof. G. H. R. von Koenigswald*)

The greatest golden treasure of prehistoric Europe, the golden horns of Gallehus, stolen and melted down in 1802, survive only in these copies (*National Museum, Copenhagen*)

Partially unwrapped mummy of Seti I (*Cairo Museum*)

Princess Nsitanebaschru, another of the royal mummies found by Emil Brugsch (*Cairo Museum*)

Giovanni Battista Belzoni (*From 'A Collection Relating to Sadler's Wells', British Museum*)

The Rosetta Stone (*By permission of the Trustees of the British Museum*)

The Parthenon (*American School of Classical Studies, Athens*)

Easter Island: the stone giants at the foot of the extinct volcano, Rano Raraku (*From Aku-Aku by Thor Heyerdahl, George Allen & Unwin, Ltd.*)

The golden comb of Solokha (*Count Bobrinskoy*)

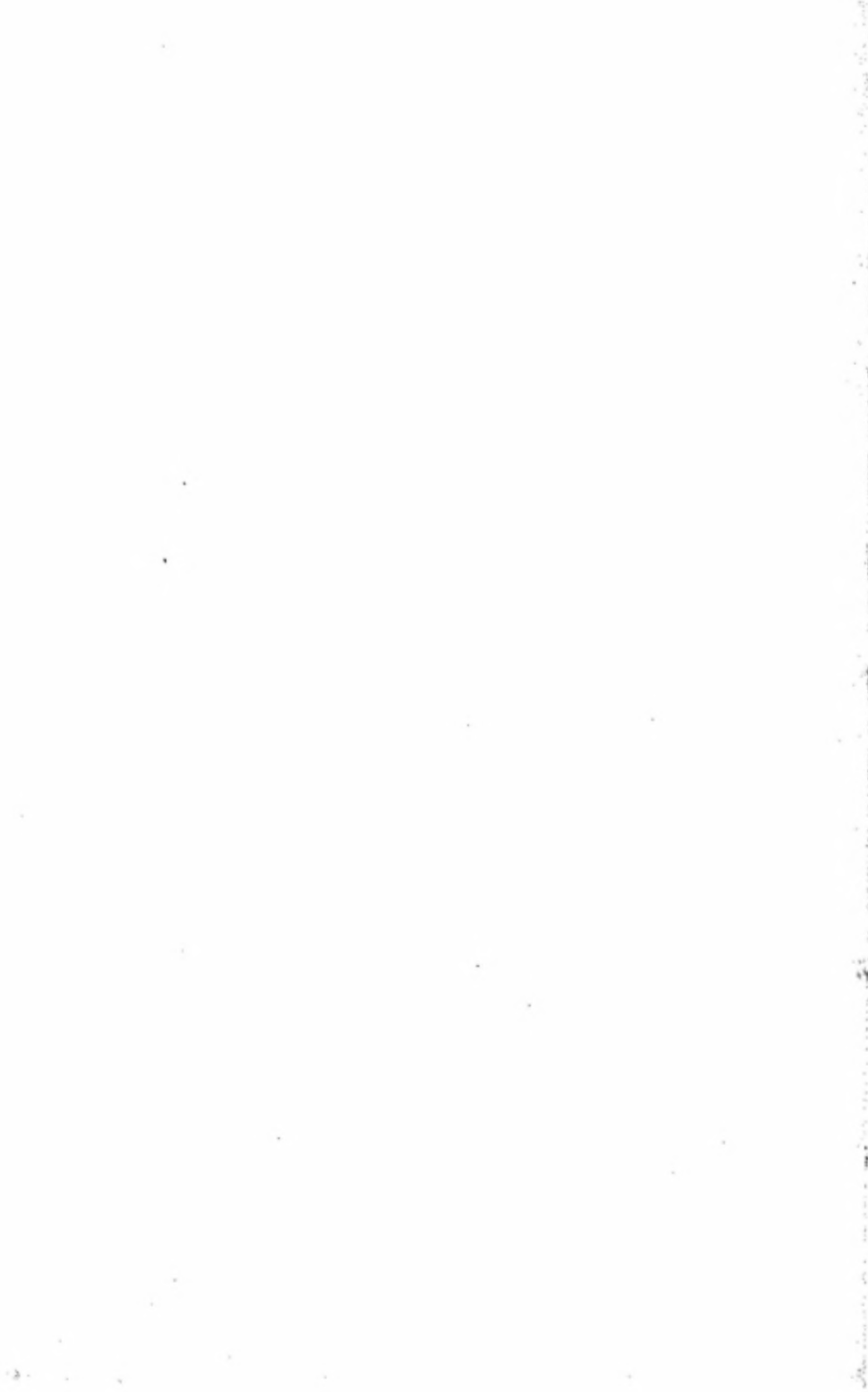
The Kensington Stone, front and side view (*Smithsonian Institution, Washington*)

Tula Toltec warriors extracting the heart of a Maya captive (*Peabody Museum*)

The Bridge of San Luis Rey from Squier's engraving (*Victor von Hagen*)

Cargo of amphoræ from the wreck near the Phare du Titan (*Yvonne de Rolland*)

Mosaic from Tehessa in North Africa, showing a Roman merchant-man with a full deck-load of amphoræ (*Lionel Casson*)



FOREWORD

WHY dig? So often is the question asked, and surely the answer must be that man is born with a curiosity that is insatiable: a curiosity that has led him from one experiment to another until now, three hundred thousand years after primitive man's first question, 'Why not chip a flint?' twentieth-century man is able to ask, 'Why not navigate beneath the Arctic ice?', 'Why not go to the moon?'

If we pause for a moment we can almost hear our early ancestors discussing among themselves the possibilities of chipping a tool like the stone found that was so good for chopping: of making a fire like the forest fire and keeping it within safe limits: of making a wheel. Very slowly the questions have been asked and answered. And now—here we are—with electric fires, space rockets, and pneumatic drills.

But these material things are not the sum of man's curiosity. Soon he was searching for an answer to the tremendous question, 'Who and what is God?' and, 'Where is mankind going?'

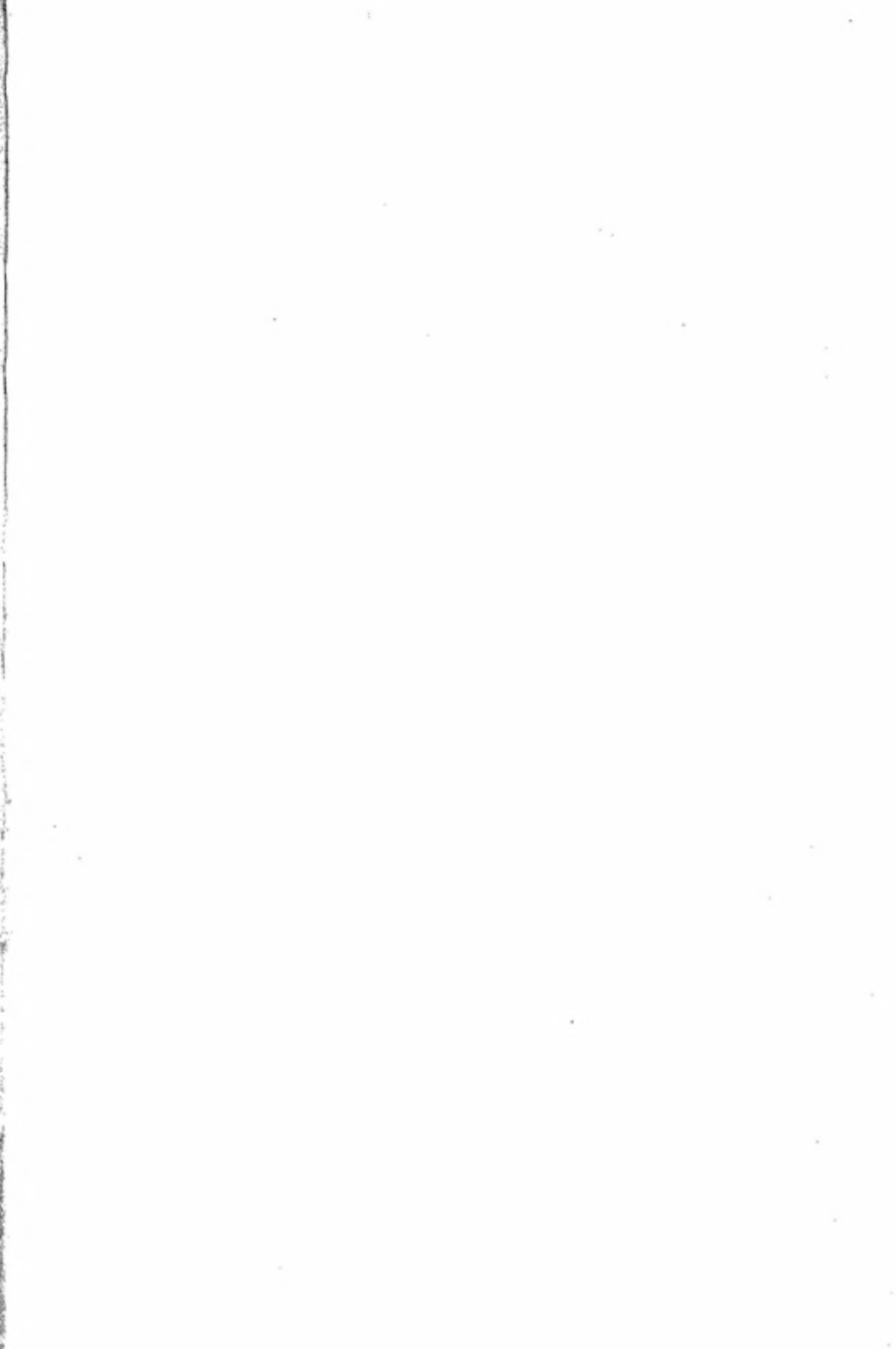
It follows then that if a basic curiosity drives forward, the same force demands a backward search. From where have we come? By what paths have we arrived in the mid-twentieth century with all its paraphernalia? Historians and archæologists have laboriously pieced together so much of the past that gradually the background has been brought into perspective and the great tapestry of past human achievement unrolled before us.

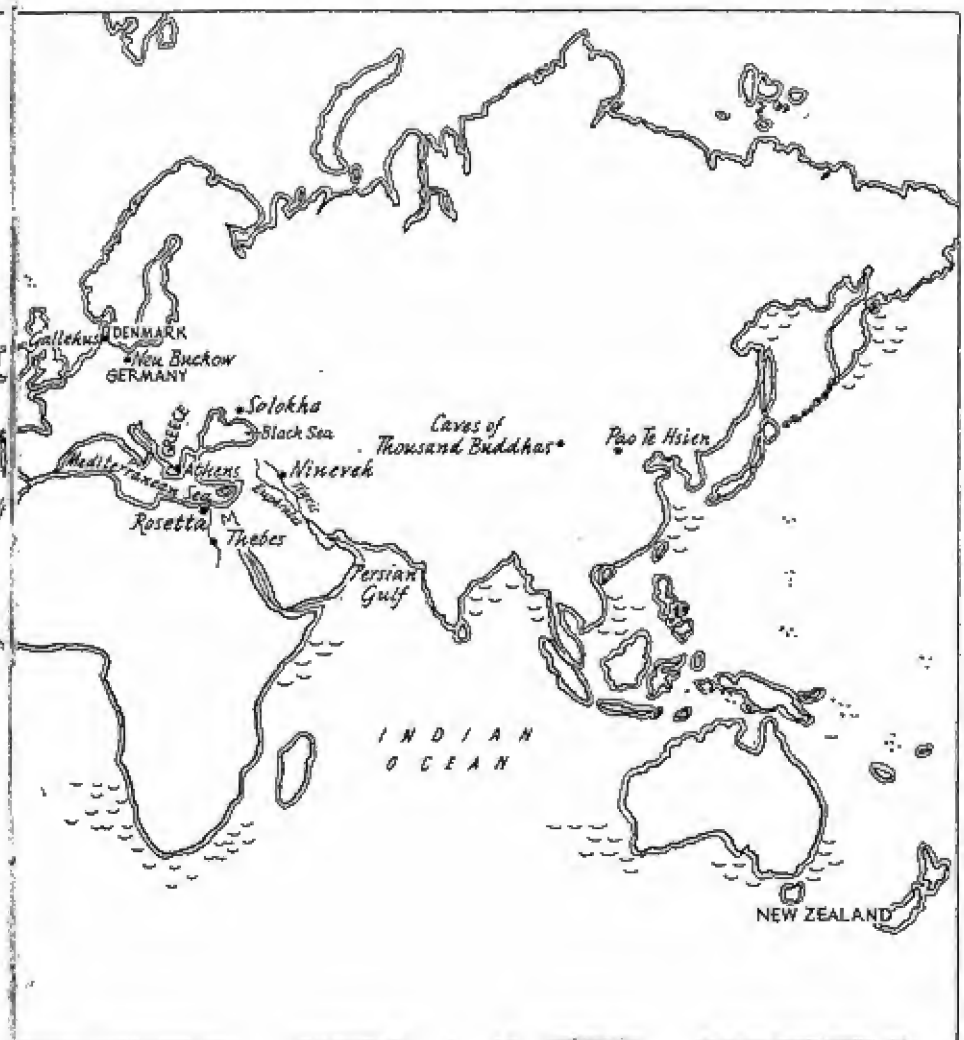
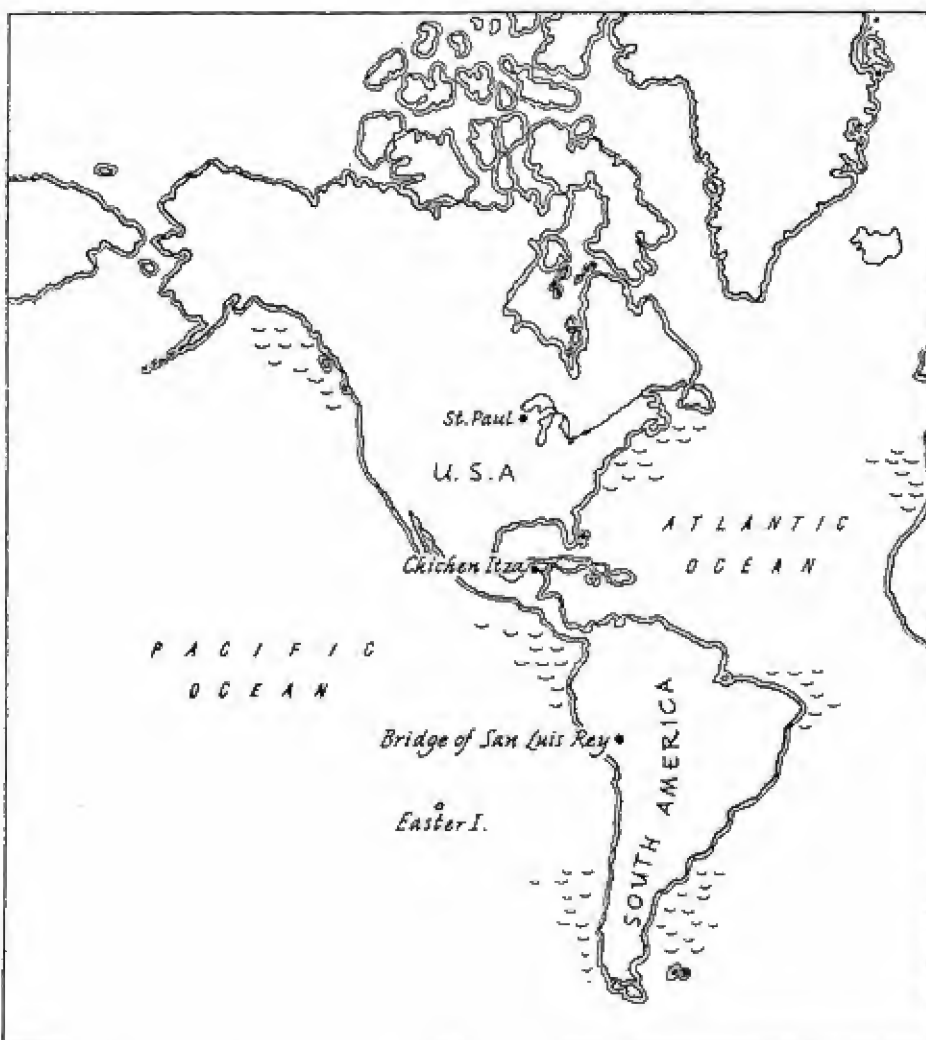
The following sixteen extracts are taken from books written by archæologists who either found the remains of bygone peoples, or who have worked upon and studied those findings. Sometimes the traces are grim and tragic, such as the human remains dredged from the sacrificial well at Chichen Itza; sometimes the evidence points to masterly achievement, as shown by the tunnels and roads of the Incas; and sometimes to exquisite beauty created for the honour of the gods, as at the Parthenon in Athens. But all such traces are fascinating if we can pause for a moment to look backward, because they

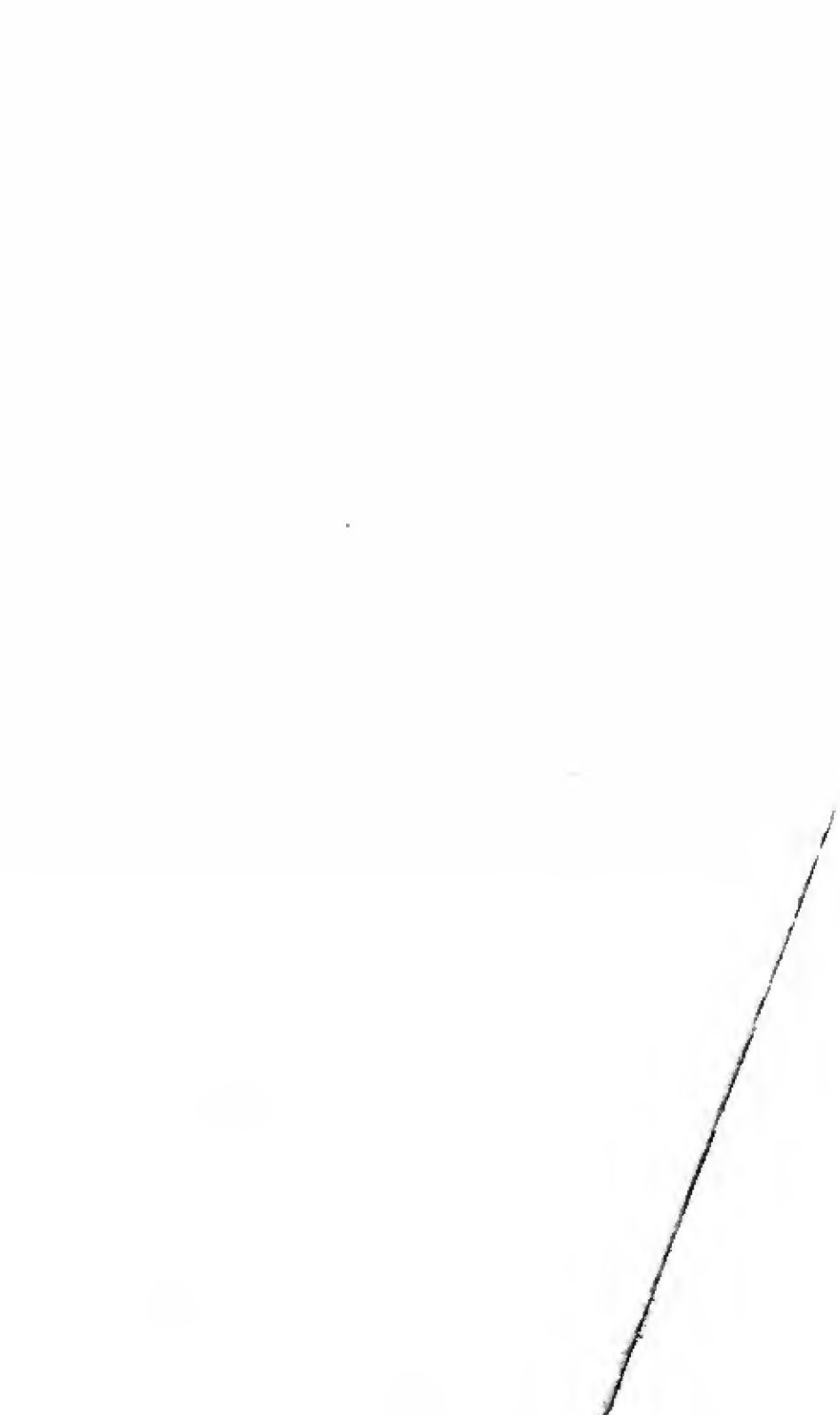
are the works, the ways, and an intimation of the thoughts and strivings of bygone *man*.

I would like to thank many friends who have been kind enough to help me while I have been compiling these chapters: Professor M. E. L. Mallowan, Dr. Glyn Daniel, Dr. Storm Rice, Count Bobrinskoy, Mr. John Hopkins of the library of the Society of Antiquaries, and Miss G. Talbot of the library of the Institute of Archæology.

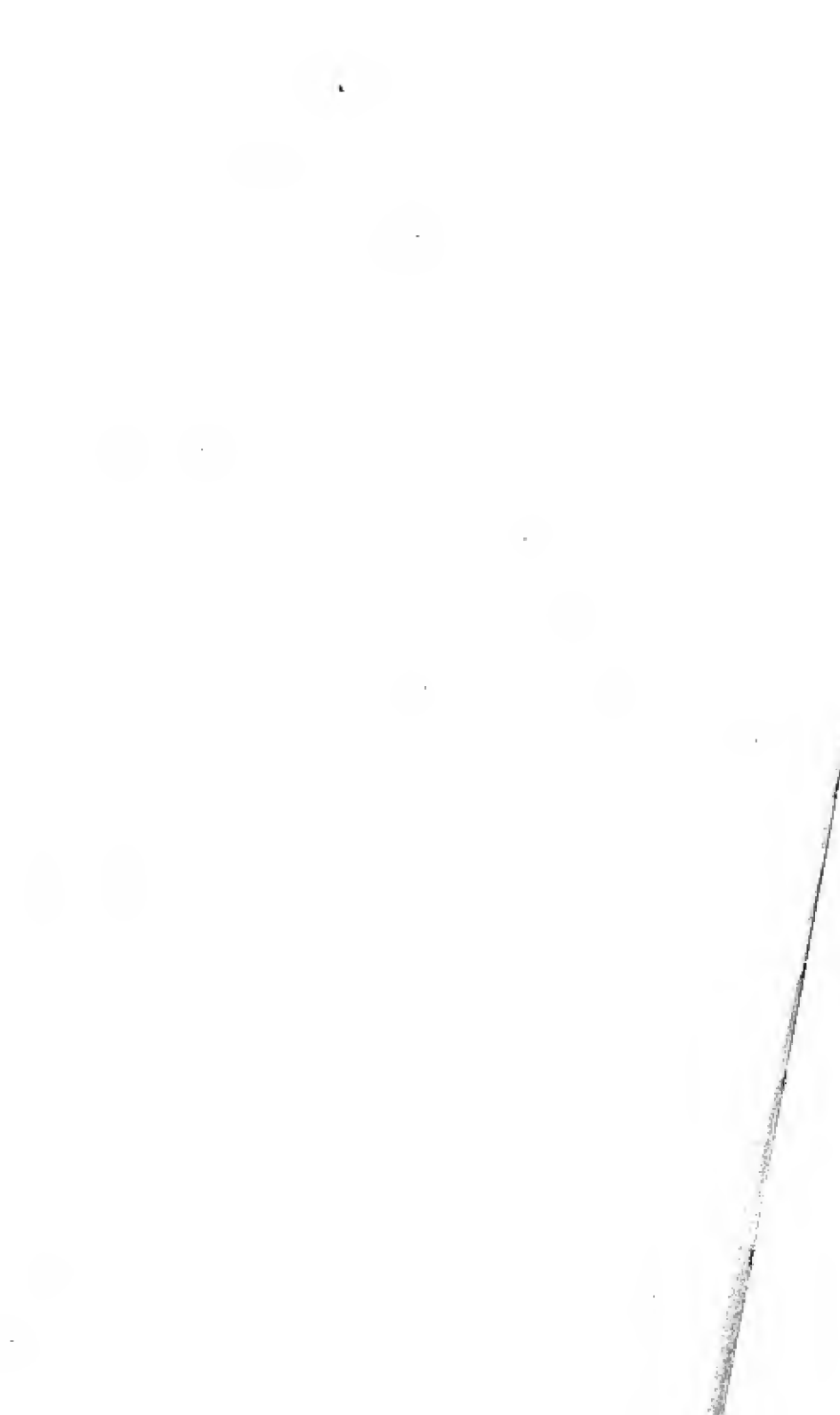
MARGARET WHEELER







FRANCE



THE ABBÉ HENRI BREUIL

THE ANTIQUITY OF MAN

(FROM BEYOND THE BOUNDS OF HISTORY. P. R. Gauthorn, 1949)

The Abbé Breuil was born in 1887 and is now the unquestioned doyen of scholars specializing in the archaeology of Palæolithic times. He has travelled widely but most of his work has been done in his native country, France. His main interest has been the study of Palæolithic art and he has copied thousands of paintings and engravings made by Palæolithic man on the walls of caves towards the end of the great Ice Age in Southern France and Northern Spain. In this extract from his *Beyond the Bounds of History* he discusses the development of man from most primitive beginnings to the end of the Palæolithic.

HOWEVER long ago Man appeared on the Earth, he is the latest arrival amongst all the inhabitants; when he first made his presence evident, the oceans had already swarmed with living creatures for more than 500 million years. We find land animals and green plants in soil some ten million years younger. The vertebrates, the first of which were Fish, are about 300 million years old; amphibious Batracians come next at 285 million years; then the Reptiles at 270 million years—though their great development into gigantic creatures only took place later when the oldest known Mammal appeared, a type of little shrew (field mouse) 160 million years ago; and the forerunners of birds which evolved from Reptiles 120 million years ago. It is only about eighty million years ago that Mammals began to multiply and to branch out from the central group into those we know as carnivora, grazing animals, rodents, and tiny little lemurs, the forerunners of Apes: this was thirty million years ago.

As yet there were no Men, only small creatures heralding the Apes which were developing only in the Old World. Certain groups of these, 'Dryopithecus', accentuated various characteristics during several tens of million years before there are definite signs of Man, though these characteristics show us that they were the advance guard of Man. Some, chiefly in central and tropical Africa and in the Siwalik Hills of Northern

India, developed an almost human set of teeth, a bigger brain and sometimes an upright attitude. These were not Men, however, though they resembled them, but Apes, doubtless not very different in behaviour from the Chimpanzees and Gorillas of to-day. We now begin to perceive the dawn or slow arrival of Man which lasted as far as we can judge for about two or three million years—attempts at a human type, most of which came to nothing and did not survive.

One day people noticed that all over the Old World—in Asia, Europe and Africa, but mostly in warm regions, from Peking to Java and western Europe—there had been beings who had chipped stone into tools or weapons, using as well bones and deer-horns and perhaps wood (though that has perished), and who had captured Fire and maintained it, without perhaps knowing how to make it. Physically, though they were two-legged, they were not very different from the highest Apes, which I have already mentioned, but their brains were much bigger; they had feet upon which they could walk and human hands which, guided by an ingenious mind, began to make tools. For these reasons, they were Men, or at least, a kind of Man. They must have had some way of talking; they hunted and ate the flesh of their quarry, breaking the bones and skulls of their victims so as to eat the marrow and brains, and seemingly had a sort of worship of the skulls of their dead relatives. What they thought, even supposing that they did think in our own fashion, we do not know.

About this time the climate, for astronomical reasons, changed in regions not far away from the North and South Poles. There were heavy rains in the regions now tropical, and in the temperate zones and farther north, snowfalls led to the development of huge ice-fields. The ocean, deprived by this vast frozen area of much water which the sun had sucked up from it and which had not been returned, sank considerably, leaving uncovered and dry land-bridges which are to-day under the sea.

Tribes of Men, descendants of the preceding ones or of others we do not yet know, lived in the time of these great changes which obliged the animals, who liked a warm climate, to emigrate southwards. But, though life was hard, several tribes remained on the edge of the big ice-fields. In some of these their ancestral brutal appearance was exaggerated, as we see by remains found at Mauer (Baden, Germany). This

happened during and between the first, second and third extensions of the ice in Northern Europe.

As the fourth Ice Age drew near, those races most brutal in appearance, such as that known as Neanderthal, prevailed in Europe and there they lived during the first half of this period, hunting mammoths, rhinoceros, great cave bear, wild horses, cattle, and reindeer. They took refuge in rock-shelters or caves. These Men lived from 187,000 to 70,000 B.C. Certain ways of burial, as well as the worship of skulls, are the only signs we have that their thought reached beyond the present life; Death, like Life, was therefore a problem to them.

It was only during the second half of the last Ice Age, after 70,000 B.C., that different groups of human beings like present-day Men appeared in Europe. They lived as hunters, like their predecessors, whom they no doubt killed off like animals. But the life of the individual, as the life of the race, grew complicated; there are signs of commerce, of the division of labour, of very advanced specialization in the working of stone, or bone—anything wooden has perished. Thanks to the graves and various somewhat involved rites in which red ochre—symbol of life—played a significant part, we know that they ornamented themselves with shells and pierced teeth made into necklaces or bracelets, or artistically arranged and sewn on to their fur garments and hoods. The cold in winter made this warm apparel absolutely necessary and, from a certain date, bone needles with eyes were made for the purpose of sewing these skin clothes together.

Javelins no doubt replaced primitive spears, and these were soon hurled by a throwing stick. These weapons in turn were later replaced by bows and arrows. Sharp stone points, cleverly made, were given to the arrows, or there were deer-horn, bone or ivory darts, sometimes decorated with figures or ornamental patterns, for these newcomers were also admirable artists. The oldest of their works were small female figures of ivory or stone; subsequently they fashioned animals.

Later still they made, in mass, freehand drawings on small objects, some on small flat stones or bone flakes or hunting amulets. But long before this art of 'miniatures' developed, they had learnt to trace animal silhouettes on the walls of caves—probably places where there were sacred ceremonies. These were mostly of the beasts they hunted, more rarely of imaginary or composite animals—semi-human creatures, their

heads usually covered by an animal or grotesque mask. The use of hunting disguises led to the wearing of ceremonial masks which were supposed to have magic power. Thus, if these people wished to represent spiritual beings, or even God, He or even they were disguised as powers controlling the animal world.

We see all this in the engravings, bas-reliefs, and paintings which are sometimes remarkably perfect and of gigantic size; one bull in the cave of Lascaux is about eighteen feet long. The painting technique blossomed out at different stages and in cycles; there were two outstanding periods with intervals of lesser achievement between.

These invaders, therefore, evolved somewhere towards the East or South-East, whilst their predecessors carried on and intensified the physical characteristics and elementary civilization of early times. The newcomers quickly suppressed the degenerate remains of an older humanity, but of the origin of these invaders, who were certainly our direct ancestors, we know nothing. When we meet them in Europe they are already mature and of varied type, with a civilization which has passed its early stages, but which they ceaselessly improved. Waves of them followed each other during the last thirty thousand years before our era, each wave bringing fresh elements which mingled with the first, each sharing in the evolution of this steadily developing civilization.

The reign of these people—brilliant hunters, lovers of art and adventure, nomads and, in their own way, religious and thinkers—lasted as long as the Ice Age fauna remained in our Western world, that is to say until about 10,000 B.C.

But other branches of the same races, deep in what are now the Asiatic steppes and African deserts, having discovered pastoral life, laboriously collected flocks and herds; whilst yet others found out how to cultivate plants yielding food and textiles. These peoples had partially blended before they were driven from their original steppes by drought which brought them daily nearer famine. They started marching westwards towards the lands where forests and meadows had gained on the 'tundras' and 'barren grounds' of the last glacial era.

Pushing before them the weak Mediterranean and Baltic tribes who were better at gathering shell-fish than at hunting, they absorbed the more gifted races devoted to big game hunting. Setting out, perhaps 25,000 years ago from their

original birthplace, they reached, step by step, our part of the world and were the first to start Agriculture. They built the first fortified cities and armed themselves to protect their harvests, both of flock and grain. This took place between 10,000 and 5,000 B.C., according to the regions.

Then, in the Near East, the dawn of written history broke, our Europe was established and the peoples whom we know settled there, forming the base of the present nations. Not one of them remembers the very distant past, the alternating advances and retreats of the glaciers during many thousands of years, or the migrations of warm or cold-loving animals, or the tribes which lived upon them.

Some half-symbolical legends, preserved by shepherds, were all that retained a few confused echoes of the most recent of these far-off days in which the first type of Man, armed with flints and surrounded by gigantic monsters, blazed the trail to the Empire of Humanity.

All that—the deserts, first fertile, then sterile; the seas which swelled upward for about three hundred feet and then sank to double that amount, leaving coasts, archipelagos or land-bridges, first high and dry and afterwards submerged—all that, no one remembers exactly, although, until the discovery of Agriculture at least 15,000 years ago in the East, it was the terrifying setting to life for almost a million years.

Less than two centuries ago the big fossil bones of elephants were still thought to be those of the semi-legendary heroes of proto-historic times. At Hoxne in Suffolk, in 1797, John Frere was the first to declare their animal nature and their association with pointed stone axes made by Man—a detail already observed in 1690 by Conyers in London, although he believed that they belonged to the days of Caesar. John Frere never stopped trying to rouse scientific societies from their torpor on the subject. But it was not until 1847 and onwards that the repeated announcements of his discoveries near Abbeville by Boucher de Perthes brought about a change in learned opinions. It was the tenacity of this literary and philosophical genius which, in 1858-9, induced the visit and control by English savants—Falconer, Prestwich and John Evans—who, with the celebrated geologist, Charles Lyell, certified the accuracy of his claims. A few months later scientific opinion altered, and Prehistory was born and developed by giant strides.

Not until less than 100 years ago did Humanity come to

possess solid proof of its unbelievable age, of the numberless generations through which its physical and ethical types were established; the silent stages during which Fire was first harnessed; then stone-chipping learnt; and then, much later, the art of sculpture and the engraving and painting of living beings. What a marvellous romance, surpassing in its reality all the imaginative dreams of Jules Verne and H. G. Wells!

Is there any problem, any subject, freer from the gloom of present-day history, on which to exercise our imagination or that of our children? Anything farther removed from our economic and social worries? Anything more encouraging of hope in the distant future, than this History of Man in which the Age of Fire takes the place of our Age of Atomic Force?

In the beginning, when Man used Fire incautiously, he must many times have set his straw hut alight, or the dry grass of the steppes, or the forest, before he learnt to control it and use it judiciously. Paying dearly in this way, he discovered how to use Fire as his chief protection against wild beasts, making it serve kitchen and forge and the family hearth where he warmed his limbs. Is not this very much like what is now happening to us with the terrible atomic power, as yet hardly discovered?

In truth, though almost a million years old, Humanity is still in its infancy; after this short phase of three or four thousand years of written history it has still a long road to travel, doubtless longer than those forgotten childish years, the history of which prehistorians search for in the ancient sea-beaches, river terraces, and dark caves.

May Humanity at last see the victory of Peace, thanks to a parallel development on the spiritual side of Thought and Ethics. May the contemplation of this long, splendid and laborious Past be a comfort and refuge to my young readers, amidst the turmoil of the Present. May it create serenity by showing to each of us how humble is our position and bring the hope of a juster, truer human order, in which the conquests of the Soul and the Ideal will equal those of Physical Force and its application to Industry.

CHINA



J. GUNNAR ANDERSSON

DRAGONS' BONES

(FROM CHILDREN OF THE YELLOW EARTH, *Kegan Paul, Trench, Trubner & Co.*, 1934)

Because of the charming habit the Chinese have of grinding up dragons' bones for medicine, there have to be dragons' bone mines. The Swede, Gunnar Andersson, working in China as a geologist and an adviser to the Government on mining affairs, became more and more interested in the dragons' bones which he could see in the apothecaries' shops, and in the mines which he could not visit since information of their whereabouts was denied him. He, and others before him, realized that these bones were the fossil remains of extinct animals. To make a collection of this material from the deposit in which it was embedded became his ambition, and in 1919 he was at last able to do so.

But in the course of his search he had hopes not only of adding to the knowledge of extinct animals but possibly of finding traces of early man. And the day came, when, at one of his dragons' bone mines, Chou K'ou Tien near Peking, quartz implements were unearthed and Andersson joyfully exclaimed, 'Here are the traces of fossil man; you have only to find him.'

It was not till 1929 that the skull was discovered that has since become famous as Peking Man: a man belonging to the days of 300,000 years ago.

In the following extract Gunnar Andersson, now Curator of the Museum of Far Eastern Antiquities, Stockholm, records his early struggles in locating the dragons' bone mines.

TO the popular imagination of the West the dragon was predominantly an evil power which was fought and defeated by some of the principal heroic figures of antique mythology and legend, such as Apollo when killing the dragon Python, Heracles who slew the Hydra of Lerna, Perseus who cut off the heads of the Gorgon Medusa, and Cadmos who performed the fateful sowing of the teeth of a dragon slain by him.

Similar conceptions are found in Germanic heroic sagas, as in the stories of Sigurd Fafnirsbane and Beowulf.

In the Psalter and the Book of Revelation the dragon is mentioned as a spirit of darkness, and in the symbolism of the medieval church it appears as the image of evil powers, the devil or Antichrist, and again we witness its defeat by the champions of light, such as the Archangel Michael and St. George.

In the sagas of the East the dragon predominantly represents a force well disposed towards mankind, and has even become the symbol for the perfect man, the Son of Heaven, the Emperor.

Two of the earlier emperors were actually sons of dragons. The Emperor Yao, a legendary figure of the proto-historical period, came into the world by the visit of a red dragon to his mother. On the back of the dragon was an inscription reading, 'Thou shalt enjoy the protection of Heaven.' Darkness and storm enveloped the two, and fourteen months after this meeting Yao was born.

A similar story is told of Kao Ti (who ruled from 206-195 B.C.), founder of the Han dynasty. T'ai Kung, his father, saw that one day his wife received a visit from a dragon whilst she was asleep by the side of a lake during a storm. The woman dreamed that she was embraced by a god and later gave birth to Kao Ti. Of this emperor, who came into the world in such a remarkable manner, it is further related that he was much addicted to wine and that he was always guarded by a dragon when he was drunk.

The dragon was associated in many ways with the imperial dignity. When the emperors fell into vicious ways of life the dragon appeared under circumstances which constituted a warning to the monarch who was so forgetful of his duties.

When Shih Huang Ti (246-210 B.C.), the great emperor who founded the Ts'in dynasty, had the dragon god slain with poisoned arrows, the monarch fell ill and died within seven days.

The dragon and the imperial dignity were identified so far that the emperor was named 'the real dragon'. The emperor's throne, purposely decorated with pictures of dragons, was called the 'dragon's throne', his robes were richly ornamented with embroidered dragons. Of special importance as an indication of rank was the lapel of the coat, with a dragon

embroidered in gold and silver thread on black silk. This emblem might only be worn by the emperor, the imperial princes and the prime minister.

The emblem of the imperial standard was also a dragon.

It was not only the emperors who were associated with dragons. The births and lives of other great men were also characterized by the appearance of a dragon. The night when Confucius was born (551 B.C.) two azure-coloured dragons descended from heaven to his mother's home. She saw them in her sleep and the same night she bore the child who was later to be the great teacher.

Even the small peasant finds his patron in the dragon, in so far as Lung Wang, the dragon king, rules over the sea, the rivers and the rain. Every place of any importance in China has its Lung Wang Miao, a temple for the worship of the giver of rain, and during periods of prolonged drought processions are held and offerings are made to induce the mighty one to grant to the thirsting country the greatest of all gifts—rain.

The fifth day of the fifth month of the Chinese year is devoted to the worship of the dragon king. It should be noted that this festival, the dragon boat festival, coincides with the beginning of the summer rainy season. It has derived its name from the races which are then held between dragon boats, long vessels, propelled by numerous oarsmen, with a carved dragon as figurehead.

De Groot, the great expert on Chinese religious life, considers that these regattas are a case of imitative magic, in which the competing dragon boats are intended to represent the conflicts of dragons, which in the Chinese conception are always followed by violent rain.

The dragon appears in Chinese history in association with the very earliest civilized monuments. Among the objects found in the capital of the Yin dynasty (about 1100 B.C.), the modern An Yang in Honan, there have been found ivory carvings which are supposed to represent dragons' heads, and the character Lung (dragon) is found among the archaic characters inscribed on plates of bone and tortoise shell.

In the *Yi King* (*The Book of Change*), a work probably produced shortly after the oracle bones (about 1000 B.C.), we find numerous references which point on the one hand to the

dragon as a bringer of rain and on the other to its connexion with the birth of great men.

In the graves of the Han period and the succeeding 'six dynasties' in China and Korea there have been found numerous and sometimes very fine dragon images, which as a rule represent the dragon as a long fabulous animal with four legs and a long tail.

In the art of the T'ang and Sung ages we find the dragon types almost fully developed in the form in which they survive in modern art. Space does not permit us to attempt the alluring, but certainly difficult, task of ascertaining the origin of the multifarious dragons in Chinese art. Rostovtzeff has expressed the surmise that the dragon as an artistic motif is not of Chinese origin, but has been borrowed, via Iran, from the Babylonian-Assyrian civilization. On the other hand it is worthy of mention that on an urn of the Hsin Tien period in Kansu (probably of the second millennium B.C.) we find a snake-like animal with forelegs and horns, a form which may evidently be a prototype of the more elaborate dragon of historical times.

It is by no means improbable that crocodiles, the alligator of the Yangtse district, *Alligator sinensis*, and the crocodile of Southern China have played a fundamental role in the development of the early type of dragon.

The usual modern dragon type has, however, characteristics which are borrowed from quite different animal species, especially the stag horns, the head, which has certain resemblances to the lion, and the claws, which have been borrowed from beasts, or, even better, birds of prey. An examination of the dragon of Chinese art, on the same lines as are followed in the study of the animal forms of natural history, would probably show that there are in existence not only several species but also several genera or even families of the Chinese dragon. In certain divergent forms of this composite monster I have thought I could recognize such features as the long filaments of the mouth of *Silurus*, the curious body of the *Hippocampus* and the arms of the cuttle-fish.

It seems quite natural that such a popular mythical figure as the dragon should be surrounded by a host of legends, and there are indeed extraordinarily remarkable things related about it.

In the summer, which is China's wet season, the dragon dwells in the clouds, and when these fabulous animals quarrel with

each other up in the skies there are clouds, thunder and the longed-for rain. If, on the other hand, the dragon feels thirsty, it sucks up the water of the ocean into the skies and thus reveals itself to man in the form of pillars of water, or water-spouts, which are sucked up by strong local whirlwinds.

In the autumn, when the rain ceases, the dragons descend from the skies to visit their palaces on the bottom of seas and lakes. It is their ascent to the clouds at the spring equinox and their return to the ocean in the autumn which cause the violent equinoctial disturbances of the atmosphere.

The dragon loves three things above all others: bamboo, arsenic and swallows. The fine lattice of the bamboo appeals to his eye. When nobody is in sight the dragon loves to lie in the bamboo groves and listen to the sighing of the wind in the leaves above him.

Arsenic is one of the dragon's favourite foods, he grows fat on it. The food which he prefers to all others is, however, the meat of the swallow. Woe to the man who attempts to pass over water in a boat after having eaten roast swallow. It will give him a peculiar and pleasant aroma, which the dragon will detect from the depths of the water. The man in the boat will be followed by one of the animals, which will blow up a storm. The boat will capsize and the unhappy occupant will become an easy sacrifice to the lord of the waters. Usually the dragon does not eat human flesh, but under these circumstances he must be regarded as having sufficient excuse.

Dragon's blood is a costly liquid and rubies are made of petrified drops of it. Even dragon's saliva has a high value, as it is the most aromatic of all perfume. 'Dragon's body incense' was formerly sent as a tribute to the emperor.

So powerful is this creature, which watches over the emperor's well-being and sends the life-giving rain to the peasants, that even 10,000 years after death it can bring blessings to the sons of Han.

In Chinese apothecaries' shops may be purchased two substances originating in the dragon: Lung Ku (dragon's bone) and Lung Ya (dragons' teeth), which stand in high esteem for their healing power.

In the pharmacological works which Chinese literature has produced since the third century A.D., and right through the centuries, there is much information concerning dragon's bone and its medicinal use.

The places of discovery are given as certain districts in Shansi and Ssüch'uan, information which has been largely confirmed by our own investigations.

Lei Hiao (A.D. 420-77) gives the following, in parts very amusing, description of these remarkable objects:

Dragons' bones from Yen Chou, Tsang Chou and Tai Yen are the best. Those which are narrow with broad veins are from female dragons; those which are coarse, with narrow veins, are from the opposite sex. Those showing five colours are best; the white and yellow are medium quality and the black ones are worst. As a rule it may be said that those in which the veins are longitudinal are impure, and those collected by women are useless.

Regarding the relation between dragons and dragons' bones there exists a difference of opinion among ancient authors, in so far as some of them consider that the bones are remains of dead dragons, whilst others insist that the dragon changes not only its skin, but also its bones.

Concerning the preparation of the bone for medicinal purposes the above-mentioned author Lei Hiao gives the following directions:

To use dragon's bone first boil some aromatic herbs. Wash the bone twice in the hot water, then reduce it to powder and place it in bags of thin stuff. Take two young swallows and, after removing their entrails, stuff the bags into the swallows and hang them over a spring. After one night take the bags out of the swallows, remove the powder and mix it with a preparation for strengthening the kidneys. The effect of such a medicine is as if it were divine.

In later times the procedure seems to have been considerably simplified, for an author of the Sung period writes that the bone should lie in spirit overnight, then be dried over a fire and then powdered.

A modern apothecary told me that the bone should merely be pulverized and the powder taken in tea.

According to the ancient pharmacopœia many diseases may be cured by dragon's bone: dysentery, gall-stones, fevers and convulsions in children at the breast, internal swellings, paralysis, women's diseases, malaria, etc. Dragons' teeth are also highly esteemed as medicine, and according to the oldest medical work, written by the mythological emperor, Sheng Nung, dragons' teeth drive out the following afflictions: spasms,

epilepsy and madness, and the twelve kinds of convulsions in children.

According to another author dragons' teeth have the quality of appeasing unrest of the heart and calming the soul. According to a third they cure headache, melancholy, fever, madness, and attacks by demons. All the authorities are agreed on one point, that dragons' teeth are an effective remedy for liver diseases.

Even though notes relating to the true nature of the Chinese 'dragon bones' are to be found dispersed in the older scientific literature, it was owing to a German scientist that at the turn of the century we first obtained detailed knowledge of this interesting object.

A German naturalist, K. A. Haberer, went to China in 1899 to explore the interior of the country, but owing to the disturbances and the hostility to foreigners which marked that period, the 'Boxer' period, he was forced to restrict his activities to the Treaty Ports.

He purchased from apothecaries' shops in Shanghai, Ningpo, Ichang and Peking a number of dragon bones and dragons' teeth, and this abundant material was examined and described by Professor Max Schlosser of Munich in a treatise entitled 'Die fossilen Säugethiere Chinas'.

The very title of Schlosser's treatise indicates the conclusions at which he arrived concerning the 'dragon bones'. The veil of mysticism over these objects was removed by the exhaustive and perfected investigations of the learned Munich palæontologist, while at the same time these once so mysterious objects gained greatly in scientific interest. It appeared that the dragons' bones had no connexion whatever with any kind of reptile, but were on the contrary fossil remains of mammals which lived on the Chinese steppes and beside the rivers during the Tertiary and Pleistocene ages.

Schlosser distinguished in the material collected by Haberer no less than about ninety mammal forms, divided into widely differing groups. The apes were represented by only a single tooth, which was possibly human. Among the beasts of prey Schlosser described several kinds, among which were bears, hyenas, and the remarkable sabre-toothed *Machairodus*. Of the elephants there were the *Stegodon*, the *Mastodon* and the *Elephas*; among the rhinoceroses the *Aceratherium* and the *Rhinoceros*; of equine animals the three-toed *Hipparion* and *Equus*, also a

Hippopotamus, several kinds of the genus *Sus*, a new type of camel, *Paracamelus*, giraffes, and various stags and antelopes.

Schlosser's monograph constitutes a giant stride forward in the investigation of the ancient animal life of China. It is evident, however, that material acquired by purchase in apothecaries' shops and consisting of broken bones, pieces of jaws, and in many cases isolated teeth, cannot afford a complete picture of the appearance and relationship of the ancient animals. A still greater defect in this material is that it was not known at all where these dragon bones came from. For obvious reasons the merchants would not disclose the names or the situations of the places in which they made their finds. The few and hesitating local indications to be found in Schlosser's book tell us, with our present knowledge, nothing, and are even in parts definitely misleading.

Such was the state of knowledge of China's fossil mammals when we resolved in 1917 in the Geological Survey in Peking to attempt to find the places where dragons' bones are obtained from the Tertiary deposits.

Our first step was to send out to the mission stations of China, and to foreigners who might be expected to be willing to help us, a circular in which we reported Schlosser's investigations and asked for help and guidance in our search for dragon bone sites.

Among the first to reply to our appeal was Father Fl. De Preter, of the Belgian Catholic Mission at Sungshutsweize in Eastern Mongolia, and the Rev. A. Bertram Lewis of the Protestant China Inland Mission at Hotsin in the southern part of the province of Shansi.

Pre-eminent among those who assisted us, however, were the Swedish missionaries in Central Honan.

When, in the late autumn of 1918, I visited this district, the missionary, Richard Andersson, showed me at Honanfu a rhinoceros skull, and I had an opportunity on November 26th of examining the place in the loess deposits south-east of Honanfu where it was stated to have been found.

When, some days later, I came to Hsin An, west of Honanfu, on the railway to Kuan'yintang, I found in one of the women missionaries at that place, Miss Maria Pettersson, the best support for my work.

In my book *The Dragon and the Foreign Devils* I have recounted my first meeting with Maria Pettersson in the spring of 1917,

and my personal impressions of this devoted worker's service to her mission. I have also described the excursion which I made in her company on 29 November 1918, in a north-north-westerly direction from the little town of Hsin An, where the station is situated.

Having expressed to Maria Pettersson my warmest thanks for that day, which was a turning-point in my scientific work in the East, I can now confine myself to a description of the district in which we made our discoveries of Tertiary mammals.

The district north of Hsin An is hilly, with heights rising from forty to seventy metres above the bottoms of the valleys. The bed-rock consists of steeply inclined strata of red sandstone and shale belonging to the great sediment formation of which the Palæozoic coal formation is the most important element.

These strata are only visible in a few places in the bottom of the valleys north of Hsin An. Elsewhere the solid bed-rock is covered by beds of red variegated clay with inlays partly of tuffaceous limestone and partly of river gravel. In the smaller valleys are found accumulations of Huang Tu, so characteristic of Northern China, the yellow earth or loess, to use a term originating in Germany. This loess deposit is much later than the red or multi-coloured clays and corresponds in time, as we shall see more closely in chapter seven, to the Ice age.

It was in the red clay that, thanks to Miss Pettersson's co-operation, we succeeded in finding our first fossils. The place where the discovery was made is called Shang Yin Kou, and lies nine kilometres from the town of Hsin An. The site of the fossils is on the eastern side of a small valley, in the cultivated fields. The fossil bones were found in the red clay in a space five metres long by two metres high. Here we found a closely packed accumulation of leg bones, skulls, etc., of a number of animal forms. It was the first opportunity offered to me and my Chinese collectors to obtain possession ourselves, in a well-stocked site, of these 'dragons' teeth', which had hitherto been surrounded in so much mystery, and the lure of the discovery was heightened because we now for the first time held in our hands complete jaws of rhinoceroses, hyenas, etc., whereas hitherto we had only been able to acquire isolated teeth, or at best pieces of a jaw, from medicine dealers.

We devoted two of the first days of December to collecting at Shang Yin Kou. We wandered in the early morning along the six-mile road from Hsin An to the little clay hill, and

returned in the evening with a procession of coolies, each carrying two baskets full of lumps of clay containing the fossil bones. There was certainly much of the lure and excitement of novelty in these days of work at Shang Yin Kou. We knew that we had stripped from the dragon a good deal of his mystery, and I could foresee with certainty that my friend Professor Wiman in Upsala would be pleasantly surprised when he came to study these discoveries in his museum.

After we had concluded the preliminary examination of Shang Yin Kou we continued along the railway to the west to Mien Chih Hsien, where we found most zealous help at the Swedish Mission Station from the missionary Malte Ringberg. North of the town of Mien Chih we made several discoveries of mammal remains in a somewhat later red Tertiary clay.

Even though these discoveries in Central Honan increased in a very high degree our belief in the possibility of making rich discoveries of mammal faunæ, it was not yet clear that we had to do here only with objects of secondary importance and that the major discoveries were to be made elsewhere. At these places in Honan 'dragon bones' were only collected occasionally, and exclusively for local use. It was evident that the medicine market of the whole of China was supplied with its needs of dragons' bones from some other place.

Inquiries at an apothecary's shop in Peking pointed to a market in Chichou in Southern Chihli, south of Paotingfu, as the place where large quantities of medicines, including dragons' bones, were purveyed and where there was a prospect of obtaining further information concerning the great sources of supply.

With the gracious assistance of the Director of the Geological Survey, Dr. V. K. Ting, one of its younger geologists, Mr. Li, was placed at my disposal. Mr. Li had even before the above-mentioned journey to Honan visited Chichou in May 1918 and had there received information which pointed to a remote and very inaccessible place of the name of Pao Te Hsien, far up in the north-west of Shansi on the Yellow River.

It was only in the summer of 1919 that I had an opportunity to send two of my collectors, Yao and Chang, to Pao Te Hsien, but this reconnaissance bore no fruit, since they arrived at an unsuitable season. Later on I sent Chang alone. He succeeded beyond all expectations and brought back to Peking large collections, which in respect of completeness and excellent

state of preservation of the skeletons far surpassed the material collected by me in Honan.

It became clear from the collections made by Chang that in the district of Pao Te Hsien we had made the acquaintance of one of the most important regions that exists for mammals of the later Tertiary period. Our activities had now grown so much in importance that it seemed desirable to entrust the systematic exploitation of the Pao Te Hsien discovery to a real expert. I therefore addressed myself to Professor Wiman, who persuaded a young Austrian palæontologist named Dr. Otto Zdansky to journey to China for two years in order to co-operate with me in the excavation and scientific treatment of these fossil remains of mammals.

During a stay of some months at Pao Te Hsien, Zdansky carried out an exhaustive model investigation of the site of the dragons' bones and of the curious industry to which these deposits had given rise. From his treatise, 'Fundorte der Hipparion-Fauna um Pao Te Hsien' I take the following data.

The district most prolific in dragons' bones, is situated thirteen kilometres north-east of the town of Oao Te, around the village of Chi Chia Kou. The landscape here, as north of Hsin An in Honan, consists of a plateau intersected by valleys, though the valleys here have more the character of narrow ravines. The bed-rock beneath the later strata consists of the productive Palæozoic coal series, from which coal is extracted in many places for local use. Farthest to the north-north-west there lies immediately over the coal-bearing formation a series of strata of at most twenty-five to thirty metres thickness, consisting of gravel beds, green-yellow or green-white deposits of marl or marly limestone, and fine yellow sand. In these strata we found some remains of a rhinoceros, an animal belonging to the horse family, fragments of fishes and fresh-water molluscs. Zdansky named this series of strata the Lu Tzū Kou series, after the name of a village situated in this part of the country.

The Lu Tzū Kou series is covered by the same red clay as we encountered in the Hsin An district of Honan. Where the Lu Tzū Kou series is missing, the red clay lies direct on the coal formation. The clay, which contains embedded banks of gravel, is about sixty-five metres thick. Somewhat above the centre, i.e. about twenty-five metres above the base of the clay formation, we found in several places nests of mammal bones

which gave rise to the curious mining industry which stimulated our interest in this place.

For at least sixty to seventy years back, and probably longer, dragons' bones have been extracted at Chi Chia Kou by a special kind of mining. Wherever an accumulation of bones was discernible in the clay walls of the ravines a sort of gallery was dug, somewhat less than one metre in height and breadth. When the supply of bones was exhausted, the digging was continued haphazardly in the hope of finding a new stock in a few days' time. In this way during the course of decades a whole network of narrow winding galleries has been formed, many of them over 100 metres in length, and many industrious bone seekers still carry on their work with their simple tools deep into the interior of the clay. The principal implement in the process is a very simple pick-axe. In addition they use, after the fossil-bearing lumps of clay have been brought into the open, a small axe in order to cut away the bone from the clay and in order to hack out the teeth from the jaws and skulls, as these command a higher price. The blocks of clay are conveyed from the mine galleries on small wooden trolleys running on four solid wooden wheels. The length of the trolley is 1.3 metres, its breadth sixty centimetres and its height thirty-five centimetres. The trolley is hauled by a man on all fours by a rope running from one shoulder between his legs to the trolley.

During work in the galleries light is supplied by simple lamps burning vegetable oil of local manufacture.

Work in the galleries is performed preferably during the cold seasons. The work is purely seasonal, alternating with summer agriculture.

In the spring the buyers of the large druggist firms arrive at Chi Chia Kou and the bones are sold for six small copper coins per Chinese pound, whilst the much more valuable teeth fetch six to eight large copper coins per pound.

Workmen in these mines have a very good idea of the real nature of the skulls which they bring to light. The resemblance of a *Hipparion* skull to that of a horse is sufficiently striking for the nature of the animal to be approximately clear to them. The large beasts of prey are the Lao Hu (tiger) and the small ones the wolf or similar species. On the spot, therefore, it is fairly well known that, at any rate in part, there is no question of dragons, but only of ancient mammals. But the teeth are

struck out of the skulls and the sick Chinaman who buys from the chemist in his native town, let us say, a rhinoceros tooth, is assuredly convinced that he is enjoying the help of his revered patron, the dragon.

When Dr. Zdansky and my Chinese collectors were at work at Chi Chia Kou they did everything possible to remain on a friendly footing with the workers in the mines. They induced them to make special efforts to excavate the skulls intact, and such complete specimens were paid for at a higher rate than that offered by the druggists' buyers. In this way Zdansky succeeded in amassing an immense collection, which in completeness and perfection of preservation probably surpasses even the famous collection of fossil mammals of the same period from Pikermi and Samon. . . .

The very large collection of mammal fossils was sent from Peking to Upsala for treatment by Professor Wiman.

All who are interested in the successful prosecution of this great piece of scientific research have reason to admire the resolution, insight and unique endurance with which Professor Wiman first completed the preparation of this vast material and then distributed it among a number of skilled collaborators for study and preparation.

The preparation of the Chinese fossil material was conducted in Upsala during the years 1918-28 under especially unfavourable local conditions, but, in spite of this difficulty, rapidly and well. . . .

Before we leave the *Hipparion* age it remains to endeavour to resolve the question how the immense hordes of varied big game lived, died and became embedded in the red clay.

The sediments indicate that large parts of Northern China were grass steppes with a dry but warm climate. The nature of the fauna points in the same direction, even though there were, especially in Central Shansi, also tracts with abundant forest vegetation.

We must therefore suppose that the *Hipparion* fauna lived on grassy steppes, with here and there park-like patches of wood, very much like the South African steppes. In this steppe country was formed, under the influence of the warm climate, the red clay, with its high percentage of iron oxide, in which the bones lie embedded.

We must, however, pay heed to yet another circumstance, namely that the red clay is in most cases entirely devoid of

fossils, and that only in a few places are mammal remains found in it. But where such a discovery is made it happens in many cases that in a space of a few square yards one finds an accumulation of bones which never belong to the same skeleton, but are chaotically piled up together. Not least significant is the fact that several widely different hoofed animals and beasts of prey are packed together anyhow. This fact struck me particularly during the excavation of the first copious *Hipparion* discovery at Shang Yin Kou in Honan, and Dr. Zdansky found similar accumulations of fossils on the great site of medicine bones at Pao Te Hsien. At Shang Yin Kou I also observed in close association with the bones, beds of gravel, certainly deposited by running water.

From these observations we are able to reconstruct the following explanation of these accumulations of bones.

Under normal conditions the animals of the *Hipparion* fauna were eaten up by beasts of prey or died natural deaths out in the steppes. In both cases the bones remained on the surface and soon decayed, so that nothing remained of them. But occasionally there occurred natural upheavals which disturbed the uniform life of the steppes. Violent cloud-bursts converted the clay steppes in a few hours into a treacherous morass. Whole hordes of terrified animals of widely different types were drowned and washed together, often perhaps only after the floating corpses had decayed and fallen to pieces, with the clay and gravel, in a chaotic mass of bones.

Other kinds of natural catastrophes are also conceivable. The brilliant palæontologist, Professor Abel of Vienna, has drawn attention to the fact that drought may have produced a similar result. If the steppe were set on fire by a flash of lightning, all sorts of frightened animals would be driven by the wall of fire towards the rivers. When the wild flight reached the precipitous banks masses of animals would be forced down in the clayey river beds.

If these conclusions are well founded, we must regard each *Hipparion* accumulation as a mass grave concealing the sacrifices of some catastrophe of the steppes. Were these heaps of bones refuse near the lairs of beasts of prey, we should scarcely find so often the remains of tigers beside the animals which were ordinarily the prey of this great bloodthirsty feline species.

SIR AUREL STEIN

HIDDEN MANUSCRIPTS IN A BUDDHIST SHRINE

(From *SERINDIA* Vol. II. Clarendon Press, Oxford, 1921)

At long last, six hundred years after Marco Polo, Europeans were again venturing into the Tarim Basin, that arid vast expanse enclosed by forbidding mountains which has become known as the 'Roof of the World' and across which the great Han emperors of China had forced a way. At first, a few centuries before our era, this Chinese thrust westward was purely military, but then with the deserts of the Tarim secured, the road was open to the far West: to India, Bactria, Persia, and so to the markets of rich and civilized Rome. The Silk Route across Central Asia was established. It was not only merchandise that travelled with the slow camel trains across the wastes of the Tarim. Envoys came and went, and monks and holy men and pilgrims. Buddhism spread eastward into China and later, when the Han rule was over, intrepid Chinese Buddhist monks returned along the desert tracks to India to visit the Holy Places. Over and over again the frontiers of the Chinese Empire were threatened and sometimes overrun by marauders: Huns, Turks, Tibetans, and Mohammedans. And then the great Mongol Ghingiz Khan seized power and ruled from the Yellow River to the Black Sea. It was about this time that Marco Polo journeyed to China, but the days of the Caravan Route were numbered; western sailors soon were to venture to India by sea and slowly the water-ways purveyed the merchandise and ideas, and the desert route across the roof of the world was forgotten.

Towards the end of the last century European curiosity drove explorers back into those regions. Martin, a Frenchman, was the first to cross the Tarim Basin since Marco Polo. A Swede, a Russian, and then Stein soon followed. Aurel Stein was a Hungarian Jew who worked for the Education Department of the Government of India and he was fired with the idea of tracing the old Chinese fortified highway and of finding the remains of those who had used and lived by the remote route. Between 1900-14 he led three expeditions into Central Asia and his account and records are wonderful. In that arid area

so much has been preserved, and at Tun Huang where the road enters China he made the tremendous discovery of a chapel filled with manuscripts, silk banners and embroideries. These were all part of the treasures of a Buddhist monastery and had been stowed away in the early years of the eleventh century when the monks at the Caves of a Thousand Buddhas hid their library before the onslaught of new marauders. Drift sand soon blocked the entrance to the shrine and the hoard was lost. The importance of this cache rests in the fact that gathered together at this monastery were manuscripts from all over the Buddhist world. They represent a collection of accumulated Buddhist treasures from the fifth to the tenth century.

The following extract is taken from Sir Aurel Stein's report *Serindia* (Vol. II) and it gives us an enchanting account of his discoveries of the cache.

THE hurried preliminary visit I had paid, soon after my first arrival in March, to the Caves of the Thousand Buddhas sufficed to impress me with the abundance of interesting materials which their fully accessible remains offered for the study of Buddhist art. Yet there was even then in view for me another and more pressing task which was bound to engross my attention at the outset.

It was at Tun-huang and through Zahîd Beg, the intelligent Turkî trader of Urumchi who had established himself there at the head of a small colony of Mohammedan exiles from Hsinchiang, that the first vague rumour had reached me of a great mass of ancient manuscripts, which had been discovered by chance several years before, hidden away in one of the cave-temples. There these treasures were said to have been locked up again by official order in charge of the Taoist priest who had come upon them. Zahîd Beg's assertion that some of these manuscripts were not in Chinese writing had naturally made me still keener to ascertain exact details. The result of Chiang Ssü-yeh's cautious inquiries seemed to support the rumour, and in close council with him I had carefully considered the question how best to gain access to the find.

On my first visit to the site the Taoist priest was away, engaged apparently with his two acolytes on a begging tour in the oasis. Nor would it, perhaps, have been wise to attempt starting operations then at once. But fortunately the young 'Ho-shang' of Tangutan extraction, then the only dweller at

the site, proved to be possessed of useful local knowledge, and it did not take Chiang Ssü-yeh long to extract from him some interesting details.

The place of discovery of the manuscript hoard was a large shrine near the northern end of the main group of caves. Its gaily painted outer structures bore evidence of extensive recent restoration, the result of pious labours started and maintained by Wang, the 'Tao-shih', or Taoist priest, who had established himself here some seven years before. The entrance to the cave-temple had been formerly blocked by fallen rock debris and drift-sand, as was still partially the case at several of the caves situated at the foot of the cliff further south. While restorations were slowly being carried on in the temple *cella* and the place now occupied by its antechapel, the labourers engaged had noticed a crack in the frescoed wall of the passage connecting the two. An opening was thus discovered that led to a recess or small chamber excavated from the rock behind the stuccoed north wall of the passage.

Manuscript rolls, written in Chinese characters but in a non-Chinese language, were said to have filled the recess completely. Their total quantity was supposed to be so great as to make up several cart-loads. News of the discovery having reached distant Lan-chou, specimens of the manuscripts were asked for from provincial headquarters. Ultimately orders were supposed to have come from the Viceroy of Kan-su to restore the whole of the find to its original place of deposit. So now this strange hoard of undeciphered manuscripts was declared to be kept by the Tao-shih behind the carefully locked door with which the hidden recess had been provided since its first discovery.

In the absence of the priest it was impossible to pursue these preliminary inquiries further. But I lost no time in visiting the alleged place of discovery. Fortunately, the young Ho-shang's spiritual guide, a Tibetan monk then also away on a begging tour, had borrowed one of the manuscripts in order to give lustre to a little private chapel of his own that he had improvised as his temporary abode in the tumble-down pilgrims' rest-house. The young monk was persuaded by Chian Ssü-yeh to bring us this specimen. It was a beautifully preserved roll of paper about ten inches high, and, when we unfolded it, in front of the original hiding-place, proved to be about fifteen yards long. The paper, yellowish in tint, looked remarkably

strong and fresh. But in a climate so dry and in a carefully sheltered hiding-place it was impossible to judge age from mere outward appearance, and with its fine texture and carefully smoothed surface it looked to me decidedly old. . . .

Thus the rapid inspection of this single specimen suggested that the reported great manuscript deposit might prove to be largely of Buddhist character. At the same time the fact that the text was written on a roll, and not in the 'concertina' or book form which has prevailed in China ever since block printing became common about the beginning of the Sung period (A.D. 960), seemed to raise a strong presumption as to the early date of the deposit. All further speculation had to be put off until I should secure access to the whole of the hidden library. It was enough encouragement at the time to find its existence confirmed.

The thought of the great store of old manuscripts awaiting exploration drew me back to the Caves of the Thousand Buddhas with the strength of a hidden magnet. But by the time at which my return to the site became possible I had learned enough of the local conditions of Tun-huang to realize that there were good reasons for caution in my first endeavours to secure access to the Tao-shih's jealously guarded treasures. The fact alone that the cave-temples, notwithstanding all apparent decay, were still real places of worship 'in being' would, by every consideration of prudence, impose obvious limitations upon my archæological activity there. But what my sagacious secretary had meanwhile gathered about the character and ways of the monk holding charge of that ancient hidden store was a further warning to me to feel my way with discretion and studied slowness. Shiang Ssü-yeh, however, had succeeded in inducing Wang Tao-shih to await my arrival at the caves instead of starting at once, when the great annual fête there had concluded, on one of his usual tours in the district to collect temple subscriptions, etc. It was encouraging, too, to feel that, apart from the genuine interest which Wang Ta-lao-yeh, the learned sub-prefect of Tun-huang, had, from the first shown in my antiquarian labours, I could to some extent rely also on the favourable impression which gradually had spread among the people of Tun-huang about my scholarly aims and methods.

When by May 21st I returned to the caves for the eagerly planned operations, it was satisfactory to find the site com-

pletely deserted but for Wang Tao-shih with his two acolyte-servitors and a humble Tibetan Lāma, knowing no Chinese and obviously harmless. The Tao-shih had come to welcome me at what for most of the year he might well claim as sacred ground entrusted to his own exclusive care. He looked a very curious figure, extremely shy and nervous, with a face bearing an occasional furtive expression of cunning which was far from encouraging. It was clear from the first that he would be a difficult person to handle. Purposely avoiding any long interview with him, I started next morning what was to be ostensibly the main object of my stay at the site, a survey of the principal shrines and the photographing of the more notable frescoes. While thus engaged at the northernmost caves near the great shrine restored by Wang Tao-shih, I cast a glance at the entrance passage, behind the wall of which the manuscript hoard was declared to have been discovered and to be still kept. To my dismay I now found the narrow opening of the recess, about five feet above the floor of the passage, completely walled up with brick-work. It seemed like a special precaution taken against my inquisitive eyes. Necessarily the sight recalled to my mind the similar device by which the Jain monks at Jesalmīr had endeavoured to keep the store of ancient palm-leaf manuscripts in their temple vault hidden from Professor Bühler.

The chief task at the beginning was to make sure that I should be allowed to see the whole of the manuscripts in their original place of deposit. With a view to sounding the priest in a confidential fashion about the facilities to be given for this purpose, I had dispatched Chiang Ssū-yeh to another cave-temple which Wang had partially restored and annexed as his living quarters. In spite of the Ssū-yeh's tactful diplomacy, the negotiations proceeded very slowly. The promise of a liberal donation for his work of pious restoration had, indeed, the initial effect of inducing the priest to explain that the walling-up of the door was a precaution primarily taken against the curiosity of the pilgrims who had recently flocked to the site in their thousands. But, being wary and of a suspicious mind, he was careful to evade any promise about showing the collection to us as a whole. All that he would agree to, and that with manifold reservations, was to let me eventually see some manuscript specimens within convenient reach of his hands. A hint cautiously put forward by my zealous secretary

about the possibility of my wishing, perhaps, to acquire one or other of these specimens had caused such manifestly genuine perturbation to the Tao-shih that the subject had promptly to be dropped.

However, in one direction at least some reassuring information emerged from these hours of diplomatic converse. From statements heard by us at Tun-huang it had appeared likely that, when the great find of manuscripts had been officially reported through the Tao-t'ai at Su-chou to the Viceroy of Kan-su, orders had been issued from the latter's Ya-mên for the transmission of specimens, and subsequently for the safe keeping of the whole collection. Fortunately, Chiang's apprehension about an official inventory having been taken on that occasion was dispelled by what the Tao-shih in a talkative mood let drop in conversation. Some rolls of Chinese texts, apparently Buddhist, had indeed been taken from him and sent to the Viceregal Ya-mên at Lan-chou. But they had failed to attract any interest there, and to Wang's undisguised chagrin no further notice had been taken of his treasured old manuscripts or, indeed, of his pious labours which had led to their discovery. Officialdom had been content with a rough statement that the manuscripts would make up seven cart-loads, and, evidently grudging the cost of transport or the trouble of close examination, had left the whole undisturbed in charge of the Tao-shih as self-constituted guardian of the temple.

Chiang's report, nevertheless, gave reason to fear that the priest's peculiar disposition would prove a serious obstacle to the realization of my hopes. The temptation of money would manifestly not offer an adequate means for overcoming his scruples, whether prompted by religious feeling or fear of popular resentment—or, as seemed likely, by both. It seemed best for me to study his case in person. So, accompanied by the Ssü-yeh, I proceeded to pay my formal visit to the Tao-shih and asked to be shown over his restored cave-temple. Ever since he had first come to the sacred site, some eight years earlier, it had been the chief care as well as the mainstay of his Tun-huang existence. Hence my request was met with alacrity.

As he took me through the airy front loggia of the shrine and the lofty antechapel, substantially built of timber and brickwork, I expressed due admiration for the lavish gilding and painting. As we proceeded through the high passage or porch giving access and light to the *cella*, it seemed difficult not

to fix my attention on the spot where, close to the outer end on the right, an ugly patch of brickwork then still masked the door of the hidden chapel. But instead of asking questions of my pious guide as to its contents, I thought it more useful to display my interest in what his zeal had accomplished in the clearing of the *cella* and in its sacred adornment. . . . Within the *cella*, measuring about fifty-six by forty-six feet, a horseshoe-shaped dais, old but replastered, displayed a collection of new clay images, all over life-size and more ungainly than any, I thought, to be seen in these caves.

The fresco decoration of the *cella*, consisting chiefly of large diapers of seated Buddhas on the walls, and of floral patterns on the ceiling, had fared better and remained well preserved for the most part. Though obviously not as old and artistic as in some of the other large temples, this pictorial work of the *cella* caused the gaudy coarseness of the statuary and the other modern additions to stand out in painful contrast. But this could not prevent me from being impressed with all that the humble monk's zeal had accomplished. His devotion to this shrine and to the task of religious merit which he had set himself in restoring it was unmistakably genuine.

Having come to the sacred site as a poor friendless mendicant from Shan-hsi, some eight years before my visit, he had devoted himself to restoring this great and badly decayed temple to what he conceived to have been its original glory. Masses of fallen conglomerate then covered the floor of the ante-chapel and almost completely blocked the mouth of the passage. Heavy drift-sand filled the rest and a considerable portion of the *cella*. I could not help being touched by the thought of the enthusiasm, perseverance, and efforts which it must have cost the quaint, frail-looking priest by my side to beg all the money needed for the labour of clearing out the sand from the temple and for the substantial reconstructions, as besides the ante-chapel there were several stories of temple-halls solidly built above of hard brick and timber, right to the top of the cliff. His list of charitable subscriptions and his accounts, proudly produced later on to Chiang Ssü-yeh, showed in fact quite a respectable total, laboriously collected during years and all spent upon these labours of piety. That he spent next to nothing on his person or private concerns was clear from the way in which he lived with his two devoted acolytes and from all that Chiang heard about him at Tun-huang.

Wang Tao-shih's ignorance of all that constitutes traditional Chinese scholarship had soon been correctly diagnosed by Chiang Ssü-yeh. So I knew that no useful purpose could be served by talking to him about my archaeological interests, about the value of first-hand materials for historical and antiquarian research, and the like, however helpful I had always found such topics for securing the friendly interest and good will of educated Chinese officials. But there was another source of aid to fall back upon—the memory of Hsüan-tsang (a Chinese Buddhist monk who made the arduous pilgrimage from China to India between the years A.D. 630–645), an appeal to which had never failed to secure me a sympathetic hearing alike among the learned and the simple. The very presence of this quaint priest, embodying in his person a compound as it were of pious zeal, naïve ignorance, and astute tenacity of purpose, was bound to recall those early Buddhist pilgrims from China who, simple in mind but strong in faith and in superstition, had made their way to India, braving all difficulties and risks. Wang Tao-shih, too, was likely to have heard of my attachment to the saintly traveller whom I was accustomed to claim as my Chinese patron saint.

So, amidst the tokens of lingering Buddhist worship surrounding us in the temple *cella*, I proceeded to tell the Taoist priest of my devotion to Hsüan-tsang: how I had followed his footsteps from India across inhospitable mountains and deserts; how I had traced the ruined sites of many sanctuaries he had visited and described; and so on. However poor my Chinese, it was a familiar theme for me to expatiate upon, and, as always, I found my efforts eagerly seconded by Chiang Ssü-yeh, elaborating details and making the most of my knowledge of Hsüan-tsang's authentic records and of the distant scenes of his travels. There was encouragement in the gleam of lively interest which I caught in the Tao-shih's eyes, otherwise shy and fitful, and soon the impression made upon him was plainly readable in his generally puzzling countenance.

The priest, though poorly versed in, and indifferent to, things Buddhist, proved in fact quite as ardent an admirer in his own way of T'ang-sêng, 'the great monk of the T'ang', as I am in another. Of this fortunate link between us I had ocular evidence to assure me when he took me outside into the spacious loggia he had built in front of the temple, and proudly showed the series of quaint but spirited paintings representing scenes

from the great pilgrim's marvellous adventures with which he had caused its walls to be decorated by a local artist. The fantastic legends there depicted were just those which have transformed Hsüan-tsang in modern popular belief throughout China into a sort of saintly Münchhausen. The fact that they are not to be found in the pilgrim's genuine *Memoirs of the Western Regions* and biography could in no way detract from the satisfaction with which I listened to my credulous cicerone expounding in voluble talk the wonderful stories of travel illustrated in the successive panels.

There was one picture in particular in which I saw good reason to display a marked interest, though it was not till later that I appealed again and again to the moral it pointed. It showed a scene which I thought at the time curiously adapted to my own case. There was T'ang-sêng standing on the bank of a violent torrent, and beside him his faithful steed laden with big bundles of manuscripts. A large turtle was to be seen swimming towards him to help in ferrying across such a precious burden. Here was clearly a reference to the twenty pony-loads of sacred Buddhist texts which the historical pilgrim managed to bring safely with him from India to China, and also to the great risks to which they had necessarily been exposed in crossing the many rivers and mountain torrents on the long journey—all facts duly related in his authentic *Life*. But the question remained whether the Tao-shih would read aright the obvious lesson here illustrated and be willing to acquire spiritual merit by letting me take back to India some of the ancient manuscripts which chance had placed in his keeping. . . .

I left Chiang Ssü-yeh behind to make the most of the favourable impression produced, and to urge an early loan of the promised manuscript specimens. But the priest had again become timorous and reserved, and vaguely postponed their delivery until later. So I remained in suspense until late that night Chiang, in silent elation, came to my tent with a small bundle of Chinese manuscript rolls which the Tao-shih had just brought him in secret, carefully hidden beneath his flowing black robe, as the first of the promised 'specimens'. The rolls, as regards writing and paper, looked as old as the one which the young Ho-shang had shown us on my first visit in March, and probably contained Buddhist canonical texts; but my

zealous secretary, ever cautious in scholarly matters, asked for time to make sure of their character.

By daybreak next morning Chiang came to inform me, with an expression of mingled amazement and triumph, that these fine rolls contained Chinese versions of Buddhist Sūtras (*ching*) which the colophons distinctly declared to have been first brought from India and translated by Hsüan-tsang. He was much impressed by the strange chance which had thus at the very outset placed in our hands texts bearing the name of Hsüan-tsang and undoubtedly early copies of his labours as a sacred translator. I, too, was struck by this auspicious omen—especially when I realized how useful an argument with the timorous Tao-shih was supplied by the interpretation which Chiang Ssü-yeh unhesitatingly put upon it. Surely it was T'ang-sêng himself, so he declared with a tone which had a sound of genuine superstitious faith, very different from his usual scepticism, who at the opportune moment had revealed the hiding-place of all those manuscripts to an ignorant priest in order that I, his admirer and disciple from distant India, might find a fitting antiquarian reward awaiting me on the westernmost confines of China.

Wang Tao-shih in his ignorance could have had no inkling, when he picked up those specimens, of their connexion with Hsüan-tsang's sacred memory. Chiang Ssü-yeh realized at once that this discovery was bound to impress the credulous priest, as a special interposition of the Arhat, my 'patron saint', on my behalf. So he hastened away to carry the news to the Tao-shih, and on the strength of this manifest proof of T'ang-sêng's support, to urge afresh the plea for free access to the hoard of hidden manuscripts. The effect was such as we both hoped for, and shortly Chiang came back convinced that the portent would work its spell. When after a few hours he returned to the Tao-shih's temple, he found the wall blocking the entrance to the recess in the passage removed, and, on its door being opened by the priest, he caught a glimpse of a small room crammed full to the roof with bundles of manuscript.

All through the morning I had purposely kept away from the Tao-shih's quarters and temple. But on getting this news I could no longer restrain my impatience to see the great hoard myself. It was a hot day, and no one stirring abroad, when accompanied by Chiang I went to the temple. There I found Wang Tao-shih evidently not yet quite relieved of his scruples

and nervous apprehensions. But under the influence of that quasi-divine hint he now summoned up courage to open before me the rough door closing the narrow entrance which led from the north side of the passage or porch into the rock-carved recess. The sight disclosed within made my eyes open wide. Heaped up in closely packed layers, but without any order, there appeared in the dim light of the priest's flickering lamp a solid mass of manuscript bundles rising to a height of nearly ten feet. They filled, as subsequent measurement showed, close on five hundred cubic feet, the size of the small room or chapel being about nine feet square and the area left clear within just sufficient for two people to stand in.

It was obvious that any proper examination of the manuscripts would be impossible in this 'black hole', and also that the digging out for this purpose of all its contents would cost time and a good deal of physical labour. It would have been premature and worse than useless at the time to suggest clearing out all the bundles into the *cella* of the temple, where they might have been examined at ease, for Wang Tao-shih was still much oppressed by fears of losing his position and patrons, in fact all the hard-won results of his pious labours at the sacred site, in consequence of the rumours which any casual observers might spread against him in the oasis. Occasional pilgrims were likely to drop in even during this 'slack season' of the site, and it would have been imprudent for the Tao-shih to keep his shrine closed against such. All we could secure for the present was that he would take out a bundle or two at a time and let us look rapidly through their contents in a less cramped and dark part of the temple precincts. It was fortunate that the large antechapel, as restored by him, included a small room on either side provided with a door and paper-covered windows. So here a convenient 'reading-room' was close at hand for the old library, so strangely preserved, where Chiang and I were screened from any inquisitive eyes, even if an occasional worshipper came to 'kotos', ring a bell, and light his stick of incense before the big and ungainly statue of Buddha.

Before proceeding to give an account of the surprising 'finds' which that first rapid examination of 'specimen' bundles from the great deposit yielded, it will be convenient to record here some details about the hiding-place to which they owed their preservation, and also to state what indications could be gathered from it as to the origin and date of the deposit. From

what Wang Tao-shih had told us it appeared that, when he first settled at Ch'ien-fo-tung some eight years before, he found the approach to this cave-temple almost completely covered with drift-sand. Judging from the conditions of other caves close by and the relatively low level of this particular shrine, it is probable that the drift-sand which had accumulated behind the fallen rock debris of the antechapel area rose to nine or ten feet at the mouth of the entrance to the *cella*. As only a few labourers could be kept at work from the proceeds of pious donations coming at first dribble-like with lamentable slowness, it had taken two years or more to lay bare the whole of the wide passage, over twenty-four feet deep, and then to clear out the heavy masses of sand which had found their way into the *cella*. When this task had been accomplished, and while work was proceeding on the new statues which the Tao-shih was eager to set up, the labourers noticed a small crack in the frescoed passage wall to the right of the entrance. There appeared to be a brick wall behind the plastered surface instead of the solid conglomerate from which the *cella* and passage are hewn, and on breaking through this the small room, or side chapel, with its hidden deposit was discovered. . . .

Highly gratifying as the variety and interest of these un hoped-for discoveries was, my foremost attention was claimed by a task that was all-important for the time being. It was to keep Wang Tao-shih in a pliable mood and to prevent him from giving way to the nervous flutterings with which the chance of any intrusions and of consequent hostile rumours among his patrons intermittently filled him. Chiang Ssü-yeh's genial persuasion and any reassuring display that I could make of my devotion to Buddhist lore and Hsüan-tsang's memory proved helpful for this end. At times the priest's apprehensive and suspicious look would yield to one of placid contentment or even pride at our appreciation of much that was to him valueless lore, even though he grew visibly tired of climbing over manuscript heaps and dragging out heavy bundles. I had taken care in advance to assure him of a generous donation for his shrine in compensation for the trouble and possible risk he was facing over my examination of his treasures.

Late in the evening a big selection of manuscripts and painted fabrics properly packed lay ready on one side of our 'reading-room', awaiting removal for what our diplomatic convention styled 'closer examination'. But there remained the

great question whether the Tao-shih would be willing to face the risks of this removal, and subsequently to fall in with the true interpretation of our purpose. It did not seem prudent as yet to approach him with ignoble words about sale and purchase, or to attempt removal except in strictest secrecy. But as we were leaving his shrine, tired with the day's work, I took occasion to engage the priest in another long talk about our common patron saint. I claimed it as an obvious proof of the Arhat's guidance and favour that I should have been privileged to behold such a great hidden store of sacred texts and other relics of piety, in part connected, perhaps, with his Indian pilgrimage, within a cave-temple which so devoted an admirer of T'ang-sêng had restored to its full splendour. As we stood in the loggia, which the Tao-shih had adorned with the frescoes of his saintly hero's adventures, I emphatically called his attention to the panel which showed Hsüan-tsang returning from India as he leads his horse heavily laden with sacred manuscripts. It was the most effective parable in support of my plea to be allowed to render accessible to Western students as much as possible of the relics which Wang Tao-shih had discovered, and yet was keeping from daylight.

Chiang Ssü-yeh remained behind and used all the forces of his persuasive reasoning to urge upon the priest that continued confinement in a dark hole was not the purpose for which T'ang-sêng had allowed him to light upon these remains of Buddhist doctrine and worship. Since he himself was quite incompetent to do justice to them by study, it would be an act of real religious merit to allow Buddhist scholars in India and the West to benefit by them. That this pious concession would also be rewarded by an ample donation for the benefit of the shrine was an argument which lost none of its force from being advanced with discretion—and supported by a preceding unconditioned gift of silver. It was impossible to feel sure what impression all such talks produced on the mind of the Tao-shih. He seemed constantly to vacillate between fears about his saintly reputation and a shrewd grasp of the advantages to be attained for his cherished task by accommodating me with regard to useless old things.

In any case it was for Chiang Ssü-yeh alone to tackle the question of the best way to secure quietly the manuscripts and paintings selected. As it proved, I had not trusted in vain his zeal and diplomatic ability. It was towards midnight, and I

was about to retire to rest, when he came with cautious footsteps to make sure that nobody was stirring near my tent. A little later he returned with a big bundle, and my satisfaction was great when assured that it contained all my 'selections'. The Tao-shih in the end had summoned up courage to fall in with my wishes, but with the explicit stipulation that nobody besides us three was to learn what was being transacted, and that as long as I was on Chinese soil the origin of these 'finds' was to be kept entirely secret. He himself was afraid of being seen at night outside his temple quarters. So Chiang Ssü-yeh took it upon himself to be the sole carrier. For seven nights more he thus came to my tent, with loads which grew steadily heavier and in the end needed carriage by instalments. It was trying work for my slightly built scholar friend, and the cheerful devotion with which he performed it remains, like all his other zealous help, deeply impressed on my memory.

The hopes which that first day's successful work had raised were not disappointed by the results of my subsequent labours. Nor did the difficult conditions with which we had to contend in the exploration of the great hidden deposit undergo any essential change. But there is no need to describe in similar detail how the search was continued day after day without remission, and still less to record in quasi-chronological order all the interesting finds which rewarded this 'digging'. That the contents of the walled-up chapel were no longer in the order in which they had been at the time of discovery was apparent, for it had been disarranged when the recess was searched for valuables. Even the assortment of the contents in each bundle was likely often to have been disturbed. Besides, it was mere chance in what order the Tao-shih would hand out the bundles.

There was no time during that hurried search to appreciate properly the antiquarian import of all that passed through my hands. . . .

What, however, attracted my attention to the manuscripts most was the chronological assurance that I could derive from them at the time. A considerable proportion of those which passed through my hands in the course of our eager search proved to be accurately dated. Before long the number of such records, many quasi-official, was large enough to allow a definite conclusion to be drawn as to the time limits within which the contents of this great cache were likely to have been brought together and finally walled up. The large majority

belonged to the tenth century of our era, and, while those from its second and third quarter were frequent, none of the dated documents came down later than the second reign of the Sung dynasty, the last recorded *nien-hao* corresponding to A.D. 990-4. So I was led to assume that the walling-up of the chamber was likely to have taken place in the early years of the eleventh century. Here I may at once mention the fact that the examination of the pictures and woodcuts has fully confirmed this conclusion, the latest dates recorded on them being of the years 980 and 983. . . .

The thought naturally suggested itself that it was some destructive invasion, such as that of the Tanguts might have been, which led to the walling-up of the little chapel and the subsequent complete oblivion of the cache. But there were indications also prompting the surmise that the small well-sheltered recess may have served previously as a place of deposit for all kinds of objects held of sacred use, but no longer needed in the various shrines and monastic quarters. Among such I may specially mention numerous small bags carefully packed and sewn up in cloth which contained nothing but tiny scraps of paper bearing Chinese characters, apparently fragments of religious texts. They had evidently been picked up and collected for the same superstitious reason which now causes Chinese people to rescue from floors and streets all bits of inscribed paper for ceremonial burning. In other and much larger bundles, the contents consisted mainly of torn ends of Sūtra rolls stiffened with thin sticks of wood; of wooden rollers once used in manuscript rolls; silk tapes; cloth wrappers and similar library 'waste'. Elsewhere ex-voto rags of fabrics, small broken pieces of silk-paintings, painted wooden 'strainers' once belonging to banners, and the like were found tightly wrapped up in covers, along with block-printed pictures of sacred figures, silk streamers, etc.

It was impossible to doubt that these were relics of worship swept up from different shrines and put aside on account of religious scruples. It seemed very improbable that such insignificant remains could have been collected and sewn up systematically in the commotion of a sudden emergency. . . .

Not knowing how long we might rely on the Tao-shih's indulgence, all I could do during those first days at his cave was to work in great haste through the contents of the 'mixed' bundles. With the constant flow of fresh materials pouring

down upon me, there was no chance of closer examination even in the case of art relics and of such manuscripts as were neither Chinese nor Tibetan and of which, consequently, I was able myself to estimate the full interest. All I could do was to assure their being put apart 'for further study', as we styled removal in diplomatic convention. More bitterly than ever did I regret the great hindrance created by my total want of Sinological training. Amidst the smothering mass of Buddhist canonical literature Chiang Ssü-yeh's zealous help, too, might not prevent Chinese texts of historical or literary interest from being left behind, even in the bundles that we were able to search. . . .

It had cost five days of strenuous work to extract and rapidly search all 'miscellaneous' bundles likely to yield manuscripts of special interest, paintings, and other relics which I was eager to rescue first of all. It was fortunate that these bundles, being less convenient building material than the tightly wrapped uniform packets of Chinese and Tibetan rolls, had been put by Wang Tao-shih mostly on the top or in other more or less accessible positions, when he had last stuffed back his treasures into their original hiding-place. But there still remained, rising against the walls of the chapel, that solid rampart of manuscript bundles. I was naturally anxious to have these, too, cleared out in order to be able to search them rapidly, but felt scarcely surprised when this proved a troublesome undertaking in more than one sense. We had so far succeeded in overcoming the Tao-shih's relapses into timorous contrariness by discreet diplomacy and judiciously administered doses of silver. But now, when faced by the heavy labour of clearing out the whole chamber and by the increased risk of exposure thus involved, the priest became distinctly refractory.

So prolonged efforts and fresh assurances were necessary before, under protest as it were, and after carefully locking the outer gate of the temple, he set to this great toil. Considering how little adapted his slender physique was for it, I felt glad that he now allowed himself to be helped by a priestly famulus whose discretion could be relied upon. By keeping them both steadily to the task in spite of renewed remonstrances, I succeeded in having by nightfall of May 28th the whole of the regular 'library bundles' taken out and transferred to neat rows, mainly in the spacious *cella* of the temple. . . .

I decided to face all risks rather than forego the endeavour

to rescue the whole hoard. Though Chiang Ssü-yeh did not conceal from me misgivings justified by his knowledge of local conditions, he loyally did his best to persuade the Tao-shih that removal of the collection to a 'temple of learning' in India, or in the land of those who held sway in the ancient home of Buddhism, would be an act which might well be approved as pious. The big sum I had authorized Chiang to offer for the collection, if ceded in bulk (forty 'horseshoes' of silver, about Rs5,000, which I should have been prepared to double if need be), was used by him as a powerful argument. It would enable Wang to retire to his native province and a life of peace, if Tun-huang should become too hot for him. Or else he might spend it all on new structures for religious use near the cave-temple, which by his restoration he could claim to have annexed as his own with all its contents known or unknown, and thus secure much-increased merit and glory.

Arguments and pleadings proved vain. Having before resignedly closed his eyes to my gathering whatever I thought of special artistic or antiquarian interest, the Tao-shih now manifestly became frightened by the prospect of losing his precious *chings* as a whole. A display of sulky petulance on his part made, for the first time, our relations become somewhat strained, and only by very careful handling did we obviate what threatened to become a breach. The Tao-shih persisted in urging with all signs of sincere anxiety that any deficiency in those piles of sacred texts was bound to be noticed by his patrons, whose publicly recorded subscriptions had helped him to clear and restore the temple; this would lead to the loss of the position which he had built up for himself in the district by the pious labours of eight years and to the destruction of his life's task. Former scruples reasserting themselves, he reproached himself for having given up sacred objects which his patrons had as much right to control as he had, and doggedly asserted the need of consulting them before taking any further step.

These discussions, carried on intermittently, helped to gain time for the clearing of the newly disclosed mixed bundles, and by the evening of the second day it was completed. But when I returned early next morning in order to start the close search for the regular Chinese bundles for any remnants of Central-Asian texts, or other relics of special interest that might be hidden among their rolls, I found to my dismay that

the priest, seized by a fit of perturbation and qualms, had found strength to shift back overnight almost the whole of them to their gloomy hiding-place. The exertion which this *coup* had cost him only added to the sullenness of his temper. But the quantity of valuable paintings, non-Chinese manuscripts and other relics already removed gave us a material advantage. This and the Tao-shih's unmistakable wish to secure a substantial sum of money for new building operations that he contemplated, led at last to what I could well consider a substantial success in our protracted diplomatic struggle. The agreement arrived at assured me fifty compact bundles of Chinese, and five of Tibetan, text rolls, besides all my selections from the 'mixed' bundles which had passed through my hands. The payment made for all these acquisitions amounted to four 'horseshoes' of silver, or about Rs500. When I now survey the wealth of archæological materials alone that I carried away for this sum, the bargain may well seem great beyond credence.

The experience gained of the Tao-shih's pusillanimous frame of mind made me doubly anxious to lose no time in removing the heavy loads of Chinese and Tibetan rolls. So far it had been my devoted Chinese secretary who night by night struggled to my tent with the loads of my daily 'selections'. But the new task being wholly beyond his strength, I sought help on this occasion from Ibrâhîm Bêg and Tila Bai, another trusted old follower. Two midnight trips which they made to the temple with Chiang, under the screening shadow of the steep river-bank, allowed the huge sackfuls to be safely removed to my store-room without anyone, even of my own men, having received an inkling. Prolonged absence from his clients in the oasis had caused the nervousness of Wang Tao-shih to increase. So as soon as our transaction was completed he hastened to resume his seasonal begging tour in the district.

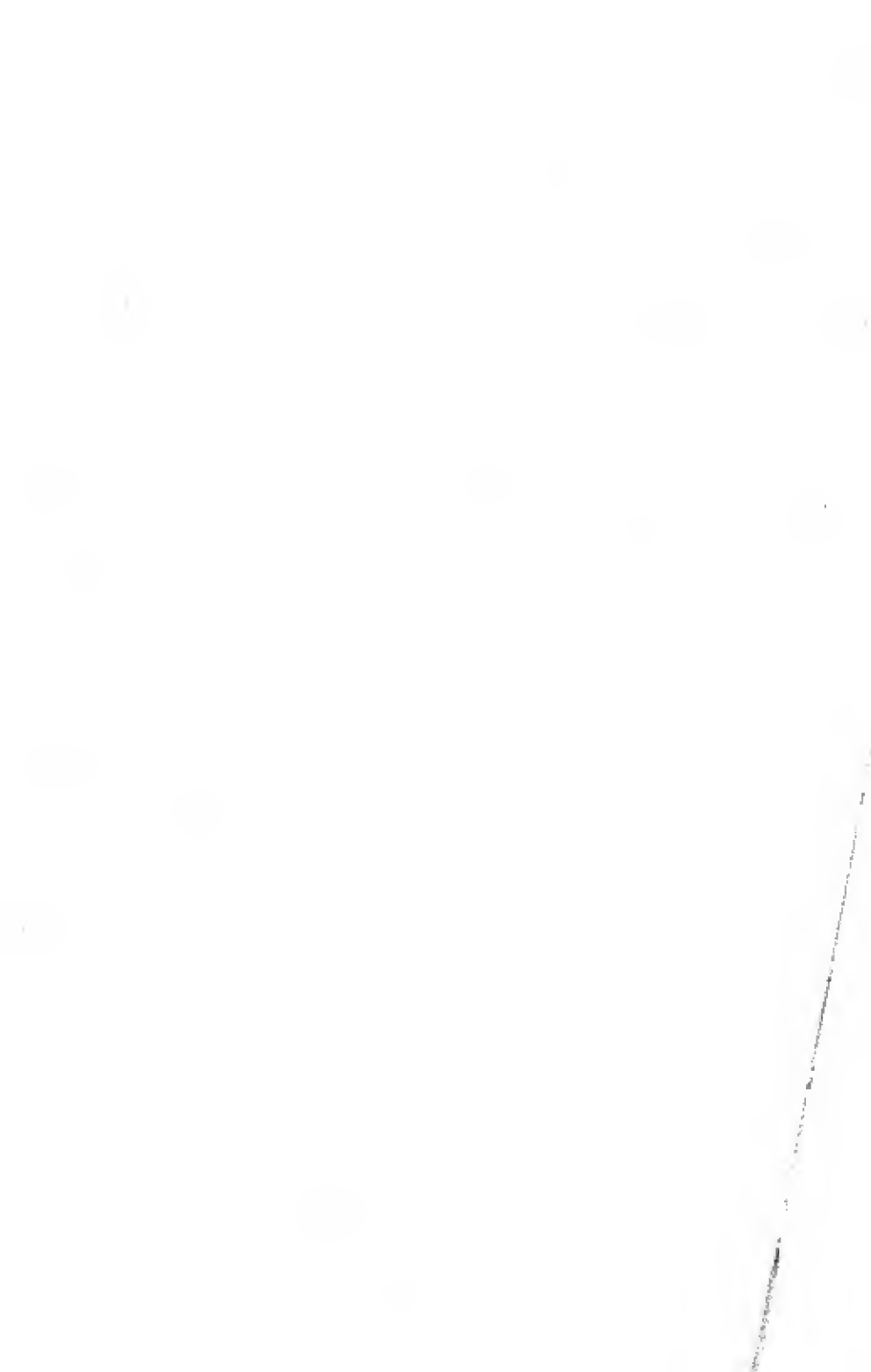
In order to assuage his spiritual scruples as well as I could and to give visible proof of grateful attachment to my 'patron saint's' memory, I had previously arranged through the priest to have one of the abandoned smaller shrines in the southern group of grottoes redecorated with a new clay image of Hsüan-tsang. The Tun-huang sculptor's work in due time produced an artistic eyesore, but widely advertised by the Tao-shih it helped to dispel suspicions about my long visit. So when a week later he returned I found him reassured that the secret

had not been discovered, and that his spiritual influence, such as it was, had suffered no diminution. Thus it became possible to make him stretch a point further and allow me to acquire some twenty more bundles of Chinese manuscripts, with supplementary selections from the 'mixed' bundles, against an appropriate donation for his temple. When later on I proceeded to the packing, the manuscript acquisitions filled seven cases, such as horses could carry, while five more were required to hold the paintings, decorated textiles, and other miscellaneous relics. The safe packing of the painted silks proved to be a very delicate task needing great care, and I was glad to utilize for it the days when sandstorms made photographic work in the caves impossible. The risk of causing suspicion in Tun-huang by a sudden large order of cases was avoided by the precaution I had taken to bring some 'empties' to the site and by securing the rest by discreet instalments.

The forethought and care bestowed on such necessary safeguards did not remain unrequited. I had the satisfaction of seeing that the shy Tao-shih, honest in his own way, now breathed freely again. It seemed almost as if in a dim way he recognized that it was a pious act on his part to let me rescue for Western scholarship as much as circumstances would permit of those ancient Buddhist relics which local ignorance would allow to lie here neglected or to be lost in the end. When I finally took my departure from the Caves of the Thousand Buddhas, his quaint sharp-cut face had resumed its customary expression of shy but self-contented serenity. We parted in fullest amity. But the most gratifying proof I received of the peaceful state of his mind was when, on my return to An-hsi four months later, he agreed to give up, for that 'temple of learning' in the distant West of which I had told him so often, another big share of the Chinese and Tibetan manuscripts in the shape of over two hundred and thirty compact bundles. How this was successfully achieved through Chiang Ssü-yeh's persuasive diplomacy and in perfect secrecy has been told in my *Personal Narrative*. But it was only when all the twenty-four cases, heavy with manuscripts rescued from the priest's precarious keeping, and the five more filled with paintings and other art remains from the same hoard, had been safely deposited in the British Museum, that I could feel true relief.



EGYPT



G. B. BELZONI

MUMMIES

(FROM NARRATIVE OF THE OPERATIONS AND RECENT DISCOVERIES
IN EGYPT AND NUBIA. *John Murray, 1820*)

There is something endearing about Giovanni Battista Belzoni. Despite the fact that he was a perfect exponent of how excavation should not be carried out, he nevertheless remains an engaging character. He came to this country from Italy in the early years of the nineteenth century and gained a livelihood in a number of ingenious ways—one of which was being 'the strong man' at shows. There are pictures of him, all muscle and moustache, in the recognized attitude: feet firmly planted on the floor, knees out, arms wide, supporting tier upon tier of young men, flamboyantly clad, balanced upon him.

The following consists of Belzoni's introduction to his book, and extracts which record his work on both sides of the Nile at Luxor. Small wonder that archæologists in discussing his tomb-robbing activities have written that they turn 'green with envy, then red with shame, and then white with rage'.

PREFACE TO BELZONI'S ACCOUNT OF HIS WORK IN EGYPT AND NUBIA

AS I made my discoveries alone, I have been anxious to write my book by myself, though in so doing, the reader will consider me, and with great propriety, guilty of temerity; but the public will perhaps gain in the fidelity of my narrative, what it loses in elegance. I am not an Englishman, but I prefer that my readers should receive from myself, as well as I am able to describe them, an account of my proceedings in Egypt, in Nubia, on the coast of the Red Sea, and in the Oasis; rather than run the risk of having my meaning misrepresented by another. If I am intelligible, it is all that I can expect. I shall state nothing but the plain matters of fact, as they occurred to me in these countries, in 1815-16-17-18 and -19. A description of the means I took in making my researches, the difficulties I had to encounter, and how I overcame them, will give a tolerably correct idea of the manners and customs of the people I had to deal with. Perhaps I have spoken too much of

the obstacles thrown in my way, by the jealousy and intriguing spirit of my adversaries, without considering that the public will care little about my private quarrels, which to me, of course, appeared of the greatest consequence on the spot, in these countries. But I hope that a little indulgence may be allowed to my mortified feelings, particularly when I reflect that it was through them that I was compelled to leave Egypt before I had completed my plans.

I must apologize also for the few humble observations I have ventured to give on some historical points; but I have become so familiar with the sight of temples, tombs, and pyramids, that I could not help forming some speculation on their origin and construction. The scholar and learned traveller will smile at my presumption, but do they always agree themselves in their opinions on matters of this sort, or even on those of much less difficulty? Much has been written on Egypt and Nubia by the travellers of the last century, by Denon, and the French *scavans*, whose general account of these countries has scarcely left anything unnoticed; and by Mr. Hamilton, to the accuracy of the latter of whom I can bear the most ample testimony. But what can I say of the late Sheik Burckhardt, who was so well acquainted with the language of these people, that none of them suspected him to be an European? His account of the tribes in these countries is so minutely correct that little or nothing remains for observation in modern Egypt and Nubia.

I have, however, one more remark to make on myself, which I am afraid the reader will think very vain: it is this, that no traveller had ever such opportunities of studying the customs of the natives as were afforded to me, for none had ever to deal with them in so peculiar a manner. My constant occupation was searching after antiquities, and this led me in the various transactions I had with them, to observe the real character of the Turks, Arabs, Nubians, Bedowens, and Ababdy tribes. Thus I was very differently circumstanced from a common traveller, who goes merely to make his remarks on the country and its antiquities, instead of having to persuade these ignorant and superstitious people to undertake a hard task, in labours, with which they were previously totally unacquainted.

My native place is the city of Padua: I am of a Roman family, which has resided there for many years. The state and troubles of Italy in 1800, which are too well known to require

any comment from me, compelled me to leave it; and from that time I have visited different parts of Europe, and suffered many vicissitudes. The greater part of my younger days I passed in Rome, the former abode of my ancestors, where I was preparing myself to become a monk; but the sudden entry of the French army into that city altered the course of my education, and being destined to travel, I have been a wanderer ever since. My family supplied me occasionally with remittances; but as they were not rich, I did not choose to be a burthen to them, and contrived to live on my own industry, and the little knowledge I had acquired in various branches. I turned my chief attention to hydraulics, a science that I had learned in Rome, which I found much to my advantage, and which was ultimately the very cause of my going to Egypt. For I had good information that a hydraulic machine would be of great service in that country, to irrigate the fields, which want water only to make them produce at any time of the year. But I am rather anticipating. In 1803 I arrived in England, soon after which I married, and, after residing in it nine years, I formed the resolution of going to the South of Europe. Taking Mrs. Belzoni with me, I visited Portugal, Spain and Malta, from which latter place we embarked for Egypt, where we remained from 1815 to 1819. Here I had the good fortune to be the discoverer of many remains of antiquity of that primitive nation. I succeeded in opening one of the two famous Pyramids of Ghizeh, as well as several of the Tombs of the Kings at Thebes. Among the latter, that which has been pronounced by one of the most distinguished scholars of the age to be the tomb of Psammuthis, is at this moment the principal, the most perfect and splendid monument in that country. The celebrated bust of young Memnon, which I brought from Thebes, is now in the British Museum; and the alabaster sarcophagus, found in the Tombs of the Kings, is on its way to England.

Near the second cataract of the Nile, I opened the temple of Ybsambul; then made a journey to the coast of the Red Sea, to the city of Berenice, and afterwards an excursion in the western Elloah, or Oasis. I now embarked for Europe, and after an absence of twenty years, returned to my native land, and to the bosom of my family; from whence I proceeded to England.

On my arrival in Europe I found so many erroneous accounts had been given to the public of my operations and discoveries

in Egypt, that it appeared to be my duty to publish a plain statement of facts; and should anyone call its correctness in question, I hope they will do it openly, that I may be able to prove the truth of my assertions.

NARRATIVE OF THE OPERATIONS AND RECENT DISCOVERIES IN EGYPT AND NUBIA

G. B. BELZONI

... Gournow is a tract of rocks, about two miles in length, at the foot of the Libyan mountains, on the west of Thebes, and was the burial place of the great city of a hundred gates. Every part of these rocks is cut out by art, in the form of large and small chambers, each of which has its separate entrance; and though they are very close to each other, it is seldom that there is any interior communication from one to the other. I can truly say, it is impossible to give any description sufficient to convey the smallest idea of those subterranean abodes, and their inhabitants. There are no sepulchres in any part of the world like them; there are no excavations or mines, that can be compared to these truly astonishing places; and no exact description can be given of their interior, owing to the difficulty of visiting these places. The inconvenience of entering into them is such, that it is not everyone who can support the exertion.

A traveller is generally satisfied when he has seen the large hall, the gallery, the staircase, and as far as he can conveniently go: besides, he is taken up with the strange works he observes cut in various places, and painted on each side of the walls: so that when he comes to a narrow and difficult passage, or to have to descend to the bottom of a well or cavity, he declines taking such trouble, naturally supposing that he cannot see in these abysses anything so magnificent as what he sees above, and consequently deeming it useless to proceed any farther. Of some of these tombs many persons could not stand the suffocating air, which often causes fainting. A vast quantity of dust rises, so fine that it enters into the throat and nostrils, and chokes the nose and mouth to such a degree, that it requires great power of lungs to resist it and the strong effluvia of the mummies. This is not all: the entry or passage where the bodies are is roughly cut in the rocks, and the falling of the sand

from the upper part or ceiling of the passage causes it to be nearly filled up. In some places there is not more than the vacancy of a foot left, which you must contrive to pass through in a creeping posture like a snail, on pointed and keen stones, that cut like glass. After getting through these passages, some of them two or three hundred yards long, you generally find a more commodious place, perhaps high enough to sit. But what a place of rest! Surrounded by bodies, by heaps of mummies in all directions; which, previous to my being accustomed to the sight, impressed me with horror. The blackness of the wall, the faint light given by the candles or torches for want of air, the different objects that surrounded me, seeming to converse with each other, and the Arabs with the candles or torches in their hands, naked and covered with dust, themselves resembling living mummies, absolutely formed a scene that cannot be described. In such a situation I found myself several times, and often returned exhausted and fainting, till at last I became inured to it, and indifferent to what I suffered, except from the dust, which never failed to choke my throat and nose; and though fortunately I am destitute of the sense of smelling, I could taste that the mummies were rather unpleasant to swallow. After the exertion of entering into such a place, through a passage of fifty, a hundred, three hundred, or perhaps six hundred yards, nearly overcome, I sought a resting place, found one, and contrived to sit; but when my weight bore on the body of an Egyptian, it crushed it like a bandbox. I naturally had recourse to my hands to sustain my weight, but they found no better support; so that I sunk altogether among the broken mummies, with a crash of bones, rags, and wooden cases, which raised such a dust as kept me motionless for a quarter of an hour, waiting till it subsided again. I could not remove from the place, however, without increasing it, and every step I took I crushed a mummy in some part or other. Once I was conducted from such a place to another resembling it, through a passage of about twenty feet in length, and no wider than that a body could be forced through. It was choked with mummies, and I could not pass without putting my face in contact with that of some decayed Egyptian; but as the passage inclined downwards, my own weight helped me on; however, I could not avoid being covered with bones, legs, arms and heads rolling from above. Thus I proceeded from one cave to another, all full of mummies piled

up in various ways, some standing, some lying, and some on their heads. The purpose of my researches was to rob the Egyptians of their papyri; of which I found a few hidden in their breasts, under their arms, in the space above the knees, or on the legs, and covered by the numerous folds of cloth, that envelop the mummy. The people of Gournow, who made a trade of antiquities of this sort, are very jealous of strangers, and keep them as secret as possible, deceiving the travellers by pretending, that they have arrived at the end of the pits, when they are scarcely at the entrance. I could never prevail on them to conduct me into these places till my second voyage, when I succeeded in obtaining admission into any cave where mummies were to be seen.

My permanent residence in Thebes was the cause of my success. The Arabs saw that I paid particular attention to the situation of the entrance into the tombs, and that they could not avoid being seen by me when they were at work digging in search of a new tomb, though they are very cautious when any stranger is in Gournow not to let it be known where they go to open the earth; and as travellers generally remain in that place a few days only, they used to leave off digging during that time. If any traveller be curious enough to ask to examine the interior of a tomb, they are ready to show him one immediately, and conduct him to some of the old tombs, where he sees nothing but the grottoes in which mummies formerly had been deposited, or where there are but few, and these already plundered; so that he can form but a poor idea of the real tombs, where the remains were originally placed.

The people of Gournow live in the entrance of such caves as have already been opened, and by making partitions with earthen walls, they form habitations for themselves, as well as for their cows, camels, buffaloes, sheep, goats, dogs, etc. I do not know whether it is because they are so few in number, that the Government takes so little notice of what they do; but it is certain that they are the most unruly people in Egypt. At various times many of them have been destroyed, so that they are reduced from three thousand, the number they formerly reckoned, to three hundred, which form the population of the present day. They have no mosque, nor do they care for one; for though they have at their disposal a great quantity of all sorts of bricks, which abound in every part of Gournow, from the surrounding tombs, they have never built a single

house. They are forced to cultivate a small tract of land, extending from the rocks to the Nile, about a mile in breadth, and two and a half in length; and even this is in part neglected; for if left to their own will, they would never take a spade in their hands, except when they go to dig for mummies; which they find to be more profitable employment than agriculture. This is the fault of travellers, who are so pleased the moment they are presented with any piece of antiquity, that, without thinking of the injury resulting from the example to their successors, they give a great deal more than the people really expect. Hence it has arisen, that they now set such an enormous price on antiquities, and in particular on papyri. Some of them have accumulated a considerable sum of money, and are become so indifferent, that they remain idle, unless whatever price they demand to be given them; and it is to be observed, that it is a fixed point in their minds, that the Franks would not be so liberal, unless the articles were worth ten times as much as they pay for them. . . .

After having described the tombs, the mummies, the rocks and the rogues of Gournow, it is time to cross the Nile and return to Carnak. . . . My daily employment kept me in continual motion. In the morning I used to give my directions for the works at Carnak. The Arabs generally come to work at the rising of the sun, and leave off from noon till two or three o'clock. When I had many employed, I divided them into parties, and set an overseer over each, to see that they worked at the proper hours, and on the allotted spots of ground, which I had previously marked out; but generally some of our people were obliged to be there, for no trust is to be reposed in the Arabs, if they should find any small pieces of antiquity. Before noon I used to cross the river and inspect the works at Gournow. Having been there the year before, and had dealings with these people, I was at home in every part of Thebes, knew every Arab there, and they knew me as well. Mr. Beechy had taken possession of the temple at Luxor, without requesting permission from the gods, and we made a dwelling place of one of the chambers: I believe it must have been the *sekos*. By the help of some mats we procured a very tolerable accommodation, but could not prevent the dust from coming on our beds, and clothes to which for my part I had long before become indifferent. We could not sleep any longer in the boat; for in consequence of the provision we had on board, such quantities

of large rats accompanied us all the way to Luxor, that we had no peace day or night, and at last they succeeded in fairly dislodging us. We thought to have been a match for them, however, for we caused all the provision to be taken out, and the boat to be sunk at Luxor, but as they were good swimmers, they saved their lives, and hid themselves in the holes of the pier; and when the provision had been put on board again, they all returned cheerfully, a few excepted, and were no doubt grateful to us for having given them a fresh appetite and a good bathing.

In Gournow our researches continued among the mummies. The Arabs had become quite unconcerned about the secret of the tombs; for they saw it was their interest to search, as they were rewarded for what they found, and those who were duly paid were indifferent whether we or their brethren found a tomb. The men were divided into two classes. The most knowing were making researches on their own account, employing eight or ten to assist them. They indicated the ground where they hoped to find a tomb, and sometimes were fortunate enough to hit on the entrance of a mummy pit in the first attempt. At other times after spending two or three days, they often found only a pit filled with mummies of the inferior class, which had nothing among them worthy of notice: so that, even to the most skilful explorer, it was a mere chance what he should find. On the other hand, in some of the tombs of the better class they found very good specimens of antiquity, of all sorts. I met with some difficulty at first in persuading these people to work in search of tombs, and receive a regular daily payment; for they conceived it to be against their interest, supposing I might obtain the antiquities at too cheap a rate: but when they saw, that sometimes they received their pay regularly, and I had nothing for it, they found it was rather in their favour, to secure twenty paras (three pence) a day, than run the risk of having nothing for their labour, which often happened with those who worked at adventure.

It was from these works that I became better acquainted with the manner in which the Egyptians regulated their burial places; and I plainly saw the various degrees and customs of the divers classes, from the peasant to the king. The Egyptians had three different methods of embalming their dead bodies, which, Herodotus informs us, were according to the expense the persons who presented the dead bodies to the mummy-

makers chose to incur. This father of history thus expresses himself on the subject:

Certain persons were appointed by the laws to the exercise of this profession. When a dead boy was brought to them, they exhibited to the friends of the deceased different models, highly finished in wood. The most perfect of these, they said, resembles one, whom I do not think it religious to name on such an occasion; the second was of less price, and inferior in point of execution; the other was still more mean. They then inquired after which model the deceased should be represented. When the price was determined, the relations retired, and the embalmers proceeded in their work. In the most perfect specimens of their art, they extracted the brain through the nostrils, partly with a piece of crooked iron, and partly by the infusion of drugs. They then, with an Ethiopian stone, made an incision in the side, through which they drew out the intestines. These they cleaned thoroughly, washing them in palm-wine, and afterwards covering them with pounded aromatics. They then filled the body with powder of pure myrrh, cassia, and other spices, without frankincense. Having sewn up the body, it was covered with nitre for the space of seventy days, which time they were not allowed to exceed. At the end of this period, being first washed, it was closely wrapped in bandages of cotton, dipped in gum, which the Egyptians use as a glue. It was then returned to the relations, who enclosed the body in a case of wood, made to resemble a human figure, and placed it against the wall in the repository of their dead. This was the most costly mode of embalming.

For those who wished to be at less expense, the following method was adopted. They neither drew out the intestines, nor made any incision in the dead body, but injected a liniment made from the cedar. After taking proper means to secure the injected oil within the body, it was covered with nitre for the time above specified. On the last day they withdrew the liquid before introduced, which brought with it all the intestines. The nitre dried up and hardened the flesh, so that the corpse appeared little but skin and bone. In this state the body was returned, and no further care taken concerning it.

There was a third mode of embalming, appropriated to the poor. A particular kind of lotion was made to pass through the body, which was afterwards merely left in nitre for the above space of seventy days and then returned.

Such is the account given us by Herodotus.

Nothing can more plainly distinguish the various classes of people, than the manner of their preservation: but there are many other remarks that may be made to the same effect. I

shall describe how I found the mummies of the principal class untouched, and hence we may judge how they were prepared and deposited in their respective places. I am sorry that I am obliged to contradict my old guide, Herodotus; for in this point, and many others, he was not well informed by the Egyptians. In the first place, speaking of the mummies in their cases, he mentions them as erect: but it is somewhat singular, that in so many pits as I have opened, I never saw a single mummy standing. On the contrary, I found them lying regularly, in horizontal rows, and some were sunk into a cement, which must have been nearly fluid when the cases were placed on it. The lower classes were not buried in cases: they were dried up, as it appears, after the regular preparation of the seventy days. Mummies of this sort were in the proportion of about ten to one of the better class, as near as I could calculate by the quantity I have seen of both; and it appeared to me, that, after the operation of the nitre, adopted by the mummy-makers, these bodies may have been dried in the sun. Indeed for my own part, I am persuaded it was so; as there is not the smallest quantity of gum or anything else to be found on them. The linen in which they are folded is of a coarser sort, and less in quantity; they have no ornaments about them of any consequence, and they are piled up in layers so as to crowd several caves excavated for the purpose in a rude manner. In general these tombs are to be found in the lower grounds, at the foot of the mountains of Gournow; and some extend as far as the border to which the inundation reaches. They are to be entered by a small aperture, arched over, or by a shaft four or five feet square, at the bottom of which are entrances into various chambers, all choked up with mummies; and though there is scarcely anything to be found on them, many of these tombs have been rummaged, and left in the most confused state.

I must not omit that among these tombs we saw some which contained the mummies of animals intermixed with human bodies. There were bulls, cows, sheep, monkeys, foxes, bats, crocodiles, fishes, and birds in them; idols often occur; and one tomb was filled with nothing but cats, carefully folded in red and white linen, the head covered by a mask representing the cat, and made of the same linen. I have opened all these sorts of animals. Of the bull, the calf, and the sheep there is no part but the head which is covered with linen, and the horns projecting out of the cloth; the rest of the body being represented

by two pieces of wood, eighteen inches wide and three feet long, in an horizontal direction, at the end of which was another, placed perpendicularly, two feet high, to form the breast of the animal. The calves and sheep are of the same structure, and large in proportion to the bulls. The monkey is in its full form, in a sitting posture. The fox is squeezed up by the bandages, but in some measure the shape of the head is kept perfect. The crocodile is left in its own shape, and after being well bound round with linen, the eyes and mouth are painted on this covering. The birds are squeezed together, and lose their shape, except the ibis, which is found like a fowl ready to be cooked, and bound round with linen like all the rest.

It is somewhat singular that such animals are not to be met within the tombs of the higher sort of people; while few or no papyri are to be found among the lower order, and if any occur they are only small pieces stuck upon the breast with a little gum or asphaltum, being probably all that the poor individual could afford to himself. In those of the better classes other objects are found. I think they ought to be divided into several classes, as I cannot confine myself to three. I do not mean to impute error to Herodotus when he speaks of the three modes of embalming; but I will venture to assert that the high, middling and poorer classes, all admit of farther distinction. In the same pit where I found mummies in cases, I found others without; and in these, papyri are most likely to be met with. I remarked, that the mummies in the cases have no papyri; at least I never observed any: on the contrary, in those without cases they are often obtained. It appears to me that such people as could afford it would have a case to be buried in, on which the history of their lives was painted; and those who could not afford a case, were contented to have their lives written on papyri, rolled up and placed above their knees. Even in the appearance of the cases there is a great difference: some are exceedingly plain, others more ornamented, and some very richly adorned with figures well painted. The cases are generally made of Egyptian sycamore: apparently this was the most plentiful wood in the country, as it is usually employed for the different utensils. All the cases have a human face, male or female. Some of the large cases contain others within them, either of wood or of plaster, painted. The inner cases are sometimes fitted to the body of the mummy: others are

only covers to the body, in form of a man or woman, easily distinguishable by the beard and the breast, like that on the outside. Some of the mummies have garlands of flowers, and leaves of the acacia, or stunt tree, over their heads and breasts. This tree is often seen on the banks of the Nile, above Thebes, and particularly in Nubia. The flower when fresh is yellow, and of a very hard substance, appearing as if artificial. The leaves also are very strong, and though dried and turned brown, they still retain their firmness. In the inside of these mummies are found lumps of asphaltum, sometimes so large as to weigh two pounds. The entrails of these mummies are often found bound up in linen and asphaltum. What does not incorporate with the fleshy part, remains of the natural colour of the pitch; but that which does incorporate becomes brown, and evidently mixed with the grease of the body, forming a mass, which on pressure crumbles into dust. The wooden case is first covered with a layer or two of cement, not unlike plaster of Paris; and on this are sometimes cast figures in *basso rilievo*, for which they make niches cut in stone. The whole case is painted; the ground generally yellow, the figures and hieroglyphics blue, green, red and black. The last is very seldom used. The whole of the painting is covered with a varnish, which preserves it very effectually. Some of the colours, in my humble opinion, were vegetable, for they are evidently transparent; besides, I conceive it was easier for the Egyptians to produce vegetable colours than mineral, from the great difficulty of grinding the latter to such perfection.

The next sort of mummy that drew my attention, I believe I may with reason conclude to have been appropriate to the priests. They are folded in a manner totally different from the others, and so carefully executed as to show the great respect paid to those personages. The bandages are strips of red and white linen intermixed, covering the whole body and forming a curious effect from the two colours. The arms and legs are not enclosed in the same envelope with the body, as in the common mode, but are bandaged separately, even the fingers and toes being preserved distinct. They have sandals of painted leather on their feet, and bracelets on their arms and wrists. They are always found with their arms across the breast, but not pressing it; and though the body is bound with such a quantity of linen, the shape of the person is carefully preserved in every limb. The cases in which mummies of this sort are

found are somewhat better executed, and I have seen one, that had the eyes and eyebrows of enamel, beautifully executed in imitation of nature. . . .

The tombs containing the better classes of people are of course superior to the others. There are some more extensive than the rest, having various apartments, adorned with figures representing different actions of life. Funeral processions are generally predominant. Agricultural processes, religious ceremonies, and more ordinary occurrences such as feasting, etc. are to be seen everywhere. . . . It would be impossible to describe the numerous little articles found in them, which are well adapted to show the domestic habits of the ancient Egyptians. It is here the smaller idols are occasionally found, either lying on the ground, or in the cases of the mummies. Vases are sometimes found containing the embalmed entrails of the mummies. These are generally made of baked clay, and painted over; their sizes differ from eight inches to eighteen; their covers represent the head of some divinity, bearing either the human form, or that of a monkey, fox, cat, or some other animal. I met with a few of these vases of alabaster in the Tombs of the Kings, but unfortunately they were broken. A great quantity of pottery is found, and also wooden vessels in some of the tombs as if the deceased had resolved to have all he possessed deposited along with him. The most singular among these things are the ornaments, in particular the small works in clay and other composition. I have been fortunate to find many specimens of their manufactures, among which is leaf gold, beaten nearly as thin as ours. The gold appears to me extremely pure and of a finer colour than is generally seen in our own. . . .

GASTON MASPERO

A CACHE OF PHARAOHS

(From a free translation from the French of 'LES MOMIES ROYALES DE DEIR EL-BAHARI', MÉMOIRES: MISSION ARCHÉOLOGIQUE FRANÇAISE AU CAIRE, 1881-84. *Ernest Leroux, Paris, 1884*)

By the time of Ramses IX (d. 1123 B.C.) the grandeur of Egypt and the magnificence of the Pharaohs was but a dream. The priests of Amon at Thebes controlled the kings like puppets and grew fat upon the wealth that flowed into the treasuries of the god. The great days of expansions and power were over, and gone were warriors like Ahmose I (1580-57 B.C.) and Thutmose III (1501-1447 B.C.) who between them had expelled the Hyksos invaders and built a mighty empire. Later, when the frontiers of that empire were shrinking Seti I and his son Ramses II (1313-1225 B.C.) had led victorious armies across Syria and had come to terms with the warlike Hittites in the North.

These illustrious kings lay buried at Thebes. For five hundred years the Pharaohs and their queens and families had been laid to rest in splendour not far from the temples of Amon. But now in the days of decadence of Ramses IX even the Pharaoh could not honour and protect them—the royal tombs were being robbed. In the reign of Ramses X six men were convicted for rifling the tombs of Seti I and Ramses II, and within a generation the desecration of the royal necropolis was well under way. Attempts were made to protect at least the bodies of the dead. In the time of Ramses XII (d. 1090 B.C.) the mummies of Seti I and Ramses II were rewrapped and interred elsewhere in the area. And when at last the line of Ramses collapsed and the High Priests of Amon seized power the spoliation was complete.

It appears from inscriptions that although the priests shut their eyes to the looting they still felt some glimmer of responsibility for the preservation of the actual mummies. The successive records inscribed on the royal coffins tell the tale of their removal from one hiding place to another and speak eloquently of the decadence of the age. At last a disused tomb at Deir el-Bahari was chosen as a depository for many of the old illustrious dead. Here they were packed in unceremoniously with what remained of their funerary offerings. The passage to this grave was

finally sealed early in the XXIInd dynasty, not long after the year 940 B.C. 'Here the greatest Kings of Egypt slept unmolested for nearly three thousand years until about 1871 or 1872, when the Theban descendants of those same tomb robbers whose persecution under Ramses IX we can still read, discovered the place and the plundering of the royal bodies began again.'

In the following extract Gaston Maspero gives a vivid account of how he and Emile Brugsch found this cache of Pharaohs and saved them from the modern tomb robbers. To-day the kings rest in Cairo—but it is possible to see the beautiful alabaster sarcophagus of Seti I in Sir John Soane's Museum, London. Belzoni found it in 1815 in the original tomb of the Pharaoh from which everything else had been stolen long before.

DURING the summer of 1871, an Arab of Gournah, in search of antiques, discovered a tomb full of coffins piled in confusion one upon the other. Most of them were covered with cartouches and carried the uræus (the symbol of the sacred serpent). The grave robbers at Thebes had known for a long time that these were the marks of royal dignity, and this man knew his job too well not to realize at first glance that luck had bestowed upon him a vault *full of pharaohs*. Never had such a thing been seen in the memory of man!

But the discovery, however precious it might be, was certainly going to be difficult to exploit. The coffins were numerous and heavy; it would need at least a dozen workmen to remove them. In order to empty the burial chambers of its precious contents, a shaft would have to be sunk and a scaffolding of beams and ropes erected over the gaping hole which would be impossible to disguise. He realized also that it would be necessary to take the neighbours into his confidence, and even to divide the treasure with them. Even so, he could not be sure that one of his associates, discontented with his share, might not go to the *moudir* of the district, or the Director of Antiquities and reveal all.

The Arab resigned himself for the moment to taking only a limited helping of the windfall that had come his way. Two of his brothers and one of his sons helped him to unwrap several mummies, to remove two or three cases of figurines, scarabs, canopic jars, painted wooden figures of Osiris, half a dozen papyri, and a collection of objects easy to carry away

and to hide. Only three times in ten years did they venture to go down to their hidden tomb, and then only at night and for a few hours. Their precautionary measures had been so successful that no outsider had a suspicion of the importance of their discovery. Each winter they sold some of the plunder they had brought back from these expeditions to the tourists; and for the disposal of the rest they hoped to meet some official who had been commissioned by his Government to acquire Egyptian antiques, or a tourist rich enough to be able to buy the royal mummies *en bloc* and to negotiate their clearance through the Egyptian customs.

However, in due course some of the objects which they had sold, found their way to Europe. About 1874 several figurines, of rough workmanship but coated with a charming blue enamel, made their appearance on the Paris market. Those that I saw there at that time were not stamped with a royal name, but carried merely the title Kheperkhare, which was attributed to at least two of the Pharaohs, namely Sesostri II of the XIIth dynasty and the more recent Pinedjem of the XXIst. All things considered, I decided that the inscription referred to the latter, and later indications soon proved that I was right. In the spring of 1876 an English general of the name of Campbell showed me a papyrus of the hieratic Ritual of the High Priest of Amon, Pinedjem, which he had bought at Thebes for four hundred pounds. In 1877 Monsieur de Saulcy sent me the photograph of a long papyrus which had belonged to Queen Nedjamet, the end portion of which is now in the Louvre and other fragments in both England and Bavaria. It was said that it had originally belonged to a Syrian dragoman who had come by it in Luxor. Monsieur Mariette had already acquired a papyrus of the same type in Suez which had been copied by order of Queen Tiuhathor Henutani. And in 1878 Rogers-Bey exhibited a wooden tablet in Paris upon which was written the following warning: 'The god Amon has issued a decree safeguarding the body of Princess Neskhous.' In short, by the year 1878 I felt sure that the Arabs had somewhere discovered one or more vaults of a hitherto unknown group of royal tombs of the XXIst dynasty.

To hunt for this site was one of the principal objects of my journey to Upper Egypt in the months of March and April, 1881. I had no expectation that methodical digging would reveal the precise spot whence all the tell-tale objects had

come—the task was much more difficult than that: it would, I knew, be necessary to extract from the fellahin, by finesse, or by force, the secret they had so carefully guarded for so long.

A long and patient enquiry among the European tourists and other purchasers had taught me one important fact, namely that the principal vendors of royal antiques were a certain Abder Rassoul Ahmed, his brother Mohammed Abder Rassoul of the village Sheikh Abd-el-Gournah, and Moustapha Agha Ayat, the consular agent in Luxor for the English, Belgian and Russian Governments. The approach to this last man would not be easy, since he was covered by diplomatic immunity and could thus escape awkward interrogation. I decided to proceed vigorously against the brothers Abder Rassoul. On April 4th I sent an order to the Chief of Police at Luxor to arrest Abder Rassoul Ahmed. I also sent a telegram to Daoud Pasha, *moudir* of Qénéh, who was also the superintendent of Public Works in the district, demanding his authorization of an immediate enquiry into the actions of the principal inhabitants of the village of Shéikh Abd-el-Gournah.

Abder Rassoul Ahmed was seized by two policemen when he was returning from an excursion in the hills and brought aboard my boat. As I do not yet speak fluent Arabic, I had him interrogated in my presence first by Monsieur Emile Brugsch, at that time Joint Curator of the Boulaq Museum, and then by Monsieur Rochementeix, Sub-Administrator of the Commission of State Lands, who were kind enough to give me the benefit of their experience and to act as interpreters. Abder Rassoul denied all knowledge of the doings I imputed to him—despite the unanimous testimony of the tourists who had bought the antiques. And he also denied having contravened Turkish law which prohibited clandestine digging, the unauthorized sale of papyri and funerary statuettes, the breaking open of mummy-cases, and the sale of objects of art or ancient Egyptian curiosities, all of which were deemed to be the property of the State. I accepted the offer he made that I should search his house, less in the hope of finding anything compromising as of giving him an opportunity of revising his attitude and of coming to some understanding with us. Soft speech, threats and offers of money were alike unsuccessful and on April 6th, the order having been received to start the official enquiry, I sent the prisoner and one of his brothers, Husséin-Ahmed, to Qénéh, where the *moudir* was waiting to investigate the case.

The business was gone into with great thoroughness. Interrogations were conducted by the magistrates of the *Moudiriyyeh* in the presence of our delegate, the Inspector of Deudérah, Ali Effendi Halil, which had, as their sole result, the sole production of innumerable witnesses in favour of the accused. The notables and elders of Gournah affirmed repeatedly and on oath that Abder Rassoul was the loyalist and most disinterested man in Egypt, who never had excavated and never would excavate anything, and was incapable of misappropriating the very smallest antique object, let alone of violating a royal tomb. One noticed the insistence with which Abder Rassoul Ahmed proclaimed that he was the servant of Moustapha Agha Ayat, and that he lived under this personage's roof. He clearly believed that by allowing it to be known that he enjoyed this domestic association with a consular agent he shared the privileges attached to diplomatic status and that, in some way, he had become a Belgian, Russian and British protégé. Moustapha Agha had carefully fostered this belief, not only in Abder Rassoul Ahmed, but in all his accomplices; also, he had persuaded them that behind the screen of official protection they were beyond the reach of the local administration. Thanks to this artifice, he had succeeded in concentrating in his own hands the entire trade in antiques in the area round Thebes.

Abder Rassoul Ahmed was provisionally set at liberty under the guarantee of his two friends, Ahmed Serour and Ismaïl Sayid Nagib. He returned home about the middle of May having been invested by the notables of Gournah with a reputation of unblemished integrity. However, his arrest, the two months of imprisonment that he had endured, and the vigour with which the inquiry had been conducted by Daoud Pasha, had demonstrated the powerlessness of Moustapha Agha to protect even the most faithful of his associates. Moreover, it was known that I proposed to return to Thebes during the winter and to reopen the inquiry from my side, whilst the *moudir* would continue his investigations as well. A few timid disclosures began to filter into the Museum. Some fresh information reached us from abroad; and, what was still more valuable, discord developed in the family of Abder Rassoul. Some members believed that the danger had passed never to return, and that the Museum administrators had been foiled, whilst others contended that it would be much more prudent

to come to an understanding with the authorities and to divulge the secret to them.

At the same time Abder Rassoul claimed that the group owed him compensation for the months he had spent in prison; and also demanded that in future he should receive half the treasure as his portion, instead of the fifth, with which he had so far been content. If the others were to refuse to give way to this demand he threatened to go to the *moudir* and tell him everything about the illicit excavations.

After a month of discussions and quarrels, the elder of the brothers, Mohammed Abder Rassoul, seeing that betrayal by his relatives was imminent, decided to get in first. He went secretly to Qénéh on June 25th, and announced to the *moudir* that he knew the whereabouts of the site for which they had searched so long and so fruitlessly.

Daoud Pasha immediately notified the Minister of the Interior, who sent the dispatch to the Khedive. I had spoken to the Khedive when I returned from Upper Egypt, and he recognized at once the importance of this declaration and demanded precise details. A second telegram arrived the next day which left no doubt as to the magnitude of the discovery. It read: 'In verifying the site discovered at Gournah on 25th of the current month of June, we have found it to be extensive and to contain more than thirty sarcophagi and many other objects such as statuettes, marbles, etc., and most of the mummy cases are covered with inscriptions. The images of serpents, and the ornaments one can see, prove it to be the site of royal burials. It is impossible to say how many antique objects there are in the chambers without bringing them up from underground.'

The Curator, Vassalli-Bey, was away on holiday, and I was on the point of departure for Europe, on private business; so I gave Monsieur Émile Brugsch the necessary powers and instructed him to take over. On June 27th, upon receipt of a second telegram, the Khedive ordered him to proceed to Thebes in company with Messrs. Thadeos Matafian, since nominated Inspector of the Area of the Pyramids, Ahmed Effendi Kamal, Secretary-Inspector of the Museum, and Mohammed Abdessalam, the pilot of the *Menshiéh*, the boat belonging to the Excavation Service.

The little party set out on the evening of Friday, July 1st. Upon arrival at Qénéh on the afternoon of Monday the 4th, a

surprise awaited them. Daoud Pasha had received various valuable objects from Mohammed Abder Rassoul, among other things the four canopic jars of Queen Aahmes Nefertari, and three funerary papyri—those of Queen Mâkerî, Queen Isimkhobion, and of Princess Insikhonsou. This was a start calculated to encourage the team; and to ensure the success of the delicate task they were about to commence, Daoud Pasha put at their disposal his *wékil* (agent), Mohammed-Bey el-Bédaoui, and several other employees of the *Moudiriyéh*, who, by their zeal and vigilance, were to render outstanding service.

On Wednesday, 6th, Mohammed Bey, Emile Brugsch, Ahmed Effendi Kamal and Thadeos Matafian were conducted by Abder Rassoul to the entrance of the rock-cut tomb. The ancient Egyptian grave-diggers had taken all possible precautions: never was a burial place more effectively disguised. The chain of hills, which here separates Bab el-Molouk from the plain of Thebes, forms a series of natural amphitheatres, separated one from the other by buttresses of rock varying in thickness between eighty and two hundred metres. At the foot of these cliffs was a long slope of yellow sand formed by the erosion of the rock above. The surface stone, dried and baked by the sun for thousands of years, had lost its consistency and disintegrated at the slightest touch. In less than twenty minutes I was able to crumble away a block of about half a square metre with my bare hands without using a knife or an instrument of any sort. There was difficulty in driving galleries and excavating chambers in such friable material, and so the ancient diggers had not made any serious attempt to tunnel in these particular cliffs until the end of the XXth dynasty. The tomb of the royal mummies had finally been cut in the harder rock of the north-west face of the buttress which separates this Amphitheatre from the Valley of Deir el-Bahari.

(The tomb consists of a shaft twelve metres deep and two long galleries, twenty-three and thirty metres respectively, separated from each other by a flight of steps. At the far end of the second gallery there is a small chamber.)

The whole was filled with wooden coffins containing mummies, and with grave goods of all kinds. Near the entrance a white and yellow coffin, with the name of Nibsni, barred the way. Beyond it was the massive mummy case of Tiouâqen, in the style of the XVIIth dynasty; then those of Queen Tiuhathor

Henutani and of Seti I. Along the side, on a bed of dried flowers, were boxes of funerary statuettes, canopic jars, bronze libation bowls, and right at the end, in the corner of the passage was a leather cover, presumably from a dais which had belonged to Queen Isimkhobion. It was crumpled and had been thrown carelessly in a heap, as though of no value. Possibly some official, in his hurry to be gone, had thus discarded it. The whole length of the passage was in the same chaotic state. . . . The coffins, seen in the fitful light of candles, bore historic names—Amenhotpou I, Thutmose II, Ahmose I and his son Siamon, the Queen Ahhotpou, Aahmas Nefertari, Pinedjem—for whom we had searched so long and earnestly and many others.

In the chamber at the far end of the galleries the objects reached to the roof; but one glimpse showed that the contents had belonged to the XXth and XXIst dynasties. These amazing discoveries surpassed all expectation. Where I had hoped to find perhaps two or three obscure kinglets, the fellahin had discovered whole families of Pharaohs. And what Pharaohs! Possibly the most illustrious ever to have reigned over Egypt: those who had delivered her from the Hyksos invaders: Sounounri and Ahmose I, the conquerors of Syria and of Ethiopia; Thutmose III, Seti I, and even Ramses II, who had been immortalized by Greek historians under the name of Sesostris.

The brothers Abder Rassoul had guarded their secret so well that even the inhabitants of Luxor and Gournah were as surprised as were the Europeans by the number and importance of the royal mummies. Already their imaginations were on fire: they spoke of caskets full of gold, of necklaces of diamonds and rubies, and of talismans. It was necessary to take immediate action in order to protect the treasure from the possibility of theft, or even of armed raiding. Two hundred Arabs were quickly assembled by the efforts of the *wakil* and were set to work. The Museum boat had not yet arrived, although it had been summoned, but Mohammed Abdessalam's small vessel was available.

He, Mohammed Abdessalam, took up his station at the bottom of the shaft and undertook to superintend the extraction of the contents of the galleries. Emile Brugsch and Ahmed Effendi Kamal received the objects as they were brought to the surface and had them taken down the slope, where they were

arranged side by side. Brugsch and Kamal never for one instant relaxed their vigilance. It took forty-eight hours of hard work to clear the galleries and chamber; but the task was only half completed: it remained to transport the treasure across the plain of Thebes and ship it across the Nile to Luxor. It took twelve and sometimes sixteen men seven or eight hours to carry the heavy coffins from the slopes of the hills to the river bank. It is easy to imagine what this journey must have been like in the dust and heat of July.

The small objects were so numerous that many of the Arabs to whom they had been entrusted attempted to steal some of them, hoping the loss would not be noticed. But the *wékil* had his eye upon them all: energetic measures brought prompt restitution and everything that had been purloined was recovered, except for one basket which had held some fifty blue enamel figurines. At last, by eleven o'clock at night, mummies, coffins and grave goods were all at Luxor.

Three days later the *Menshiéh* arrived, was loaded with her cargo of Kings, and set off again at full speed for Boulaq.

E. A. WALLIS BUDGE

THE ROSETTA STONE

(FROM THE ROSETTA STONE. *Trustees of the British Museum*. Revised 1950)

The rich and exciting history of ancient Egypt was hidden from the world until the discovery of the Rosetta Stone. How tantalizing it must have been for earlier scholars to be able to see the innumerable inscriptions on temple walls, in tombs, and on a myriad papyri, and not to be able to read the hieroglyphics, or know the mind and story of ancient Egypt. And then with the discovery of the Stone, with its bilingual inscription in Greek and Egyptian, all was changed. The ancient Egyptians emerged as personalities, they stepped boldly into historic times—we can now read of their exploits, of their poetry, and of their intrigues.

The following account of the Rosetta Stone is written by E. A. Wallis Budge of the British Museum. He relates how the stone was discovered in 1799, and how it was brought to England and eventually deciphered by Champollion. The stone can be seen to-day at the British Museum.

THE DISCOVERY OF THE STONE

THE famous slab of black basalt which stands at the southern end of the Egyptian Sculpture Gallery in the British Museum, and which has for more than a century been universally known as the 'Rosetta Stone', was found in July 1799, at a spot near the mouth of the great arm of the Nile that flows through the Western Delta to the sea, not far from the town of Rashid, or as Europeans call it 'Rosetta'. According to one account it was found lying on the ground, and according to another it was built into a very old wall, which a company of French soldiers had been ordered to remove in order to make way for the foundations of an addition to the fort, afterwards known as 'Fort Julien'.* The finder of the Stone, a French Officer of Engineers named Bouchard, and his companions observed that it bore inscriptions in three different scripts, and rightly supposed that they represented three versions of the same text. Since the last of these inscriptions

* This fort is marked on Napoleon's Map of Egypt, and it stood on the left or west bank of the Rosetta arm of the Nile.

was written in Greek and could therefore be read, they realized the possible importance of the Stone for the decipherment of the hieroglyphics in the first inscription. News of the discovery soon reached Cairo, whither the Stone was removed and placed in the Institut National which had recently been founded in that city. On its arrival in Cairo it became at once an object of the deepest interest to the body of learned men whom Napoleon had taken with him on his expedition to Egypt, and the General himself exhibited the greatest curiosity in respect of the contents of the inscriptions cut upon it. The inscription placed between the hieroglyphic and Greek versions was soon identified by Jean-Joseph Marcel and Remi Raige as a cursive form of hieroglyphic writing, but no progress was made in the decipherment of either of the Egyptian versions. Napoleon subsequently ordered a number of copies of the Stone to be made for distribution among the scholars of Europe, and two skilled lithographers, 'citizens Marcel and Galland', were specially brought to Cairo from Paris to make them. The plan which they followed was to cover the surface of the Stone with printer's ink, and then to lay upon it a sheet of paper which they rolled with india-rubber rollers until a good impression had been taken. Several of these ink impressions were sent to scholars of great repute in many parts of Europe, and in the autumn of 1800 General Dugua took two to Paris, where he committed them to the care of 'citizen Du Theil' of the Institut National of Paris.

THE ARRIVAL OF THE STONE IN ENGLAND

After the successful operations of Sir Ralph Abercromby in Egypt in the spring of 1801, a Treaty of Capitulation was drawn up, and by Article XVI the Rosetta Stone and several other large and important Egyptian antiquities were surrendered to General Hutchinson at the end of August in that year. Some of these he despatched at once to England in H.M.S. *Admiral* and others in H.M.S. *Madras*, but the Rosetta Stone did not leave Egypt until later in the year. After the ink impressions had been taken from it, the Stone was transferred from Cairo to General Menou's house in Alexandria, where it was kept covered with cloth and under a double matting. In September 1801, Major-General Turner claimed the Stone by virtue of the Treaty mentioned above, but as it was generally

regarded as the French General's private property, the surrender of it was accompanied by some difficulty. In the following month Major-General Turner obtained possession of the Stone, and embarked with it on H.M.S. *L'Egyptienne*, and arrived at Portsmouth in February 1802. On March 11th it was deposited at the Rooms of the Society of Antiquaries of London, where it remained for a few months, and the writings upon it were submitted to a very careful examination by many Oriental and Greek scholars. In July the President of the Society caused four plaster casts of the Stone to be made for the Universities of Oxford, Cambridge, Edinburgh, and Dublin, and had good copies of the Greek text engraved, and despatched to all the great Universities, Libraries, Academies, and Societies in Europe. Towards the close of the year the Stone was removed from the Rooms of the Society of Antiquaries to the British Museum, where it was mounted and at once exhibited to the general public.

DESCRIPTION OF THE STONE

The Rosetta Stone in its present state is an irregularly-shaped slab of compact black basalt, which measures about 3 feet 9 inches in length, 2 feet $4\frac{1}{2}$ inches in width, and 11 inches in thickness. The top right and left hand corners, and the right hand bottom corner, are wanting. It is not possible to say how much of the Stone is missing, but judging by the proportion which exists between the lengths of the inscriptions that are now upon it, we may assume that when it was complete it was at least 12 inches longer than it is now. The upper end of the Stone was probably rounded, and, if we may judge from the reliefs found on stelæ of this class of the Ptolemaic Period, the front of the rounded part was sculptured with a figure of the Winged Disk of Horus of Edfû, having pendent uræi, one wearing the Crown of the South, and the other the Crown of the North. Below the Winged Disk there may have been a relief, in which the king was seen standing, with his queen, in the presence of a series of gods, similar to that found on one of the copies mentioned below of the inscriptions on the Rosetta Stone. Whatever the sculptured decoration may have been, it is tolerably certain that, when the Stone was in a complete state, it must have been between five and six feet in height, and that when mounted upon a suitable plinth, and

placed near the statue of the king in whose honour it was engraved, it formed a prominent monument in the temple in which it was set up.

The inscription on the Rosetta Stone is written in two languages, that is to say, in Egyptian and in Greek. The Egyptian portion of it is cut upon it in: I. the Hieroglyphic Character, that is to say, in the old picture writing which was employed, from the earliest dynasties, for nearly all state and ceremonial documents that were intended to be seen by the public; and II. the Demotic Character, that is to say, the conventional, abbreviated and modified form of the Hieratic character, or cursive form of hieroglyphic writing, which was in use in the Ptolemaic Period. The Greek portion of the inscription is cut in ordinary uncials. The hieroglyphic text consists of 14 lines only, and these correspond to the last 28 lines of the Greek text. The Demotic text consists of 32 lines, the first 14 being imperfect at the beginnings, and the Greek text consists of 54 lines, the last 26 being imperfect at the ends. A large portion of the missing lines of the hieroglyphic text can be restored from a stele discovered in 1898 at Damanhûr in the Delta (Hermopolis Parva), and now in the Egyptian Museum in Cairo (No. 5576), and from the copy of a text of the Decree cut on the walls of a temple at Philæ.

THE EARLIEST DECIPHERERS OF THE ROSETTA STONE

An English translation of the Greek text was made by the Rev. Stephen Weston, and was read by him before the Society of Antiquaries of London in April 1802, and a French translation was made by 'citizen Du Theil', who declared that the Stone was 'a monument of the gratitude of some priests of Alexandria, or some neighbouring place, towards Ptolemy Epiphanes'; a Latin translation by 'citizen Ameilhon' appeared in Paris at about the same time. The first studies of the Demotic text were those of Sylvestre de Sacy and Åkerblad, a Swedish diplomat, in 1802. The latter succeeded in identifying in the Demotic version the equivalents of all the proper names which occurred in the Greek text, and he also recognized the words for 'temples', 'Greeks', and the third person masculine pronoun. In all probability Åkerblad's contribution to the decipherment of the Demotic text would have been even more substantial if he had not assumed that the script was exclusively

alphabetic. The credit for being the first to recognize that Egyptian writing consisted mainly of phonetic signs belongs to Thomas Young, the author of *The Undulatory Theory of Light*, who obtained a copy of the Rosetta Stone in 1814; he also demonstrated a fact which had previously been suspected by Zoëga, de Guignes and others, that the ovals, or cartouches, in the hieroglyphic version contained royal names. Thomas Young's discoveries were not, however, limited to the Rosetta Stone, but included among many other achievements the decipherment of the names of Berenice and Cleopatra, the latter on a granite obelisk with a bilingual text in Greek and hieroglyphics which had been excavated at Philæ in 1815 by W. J. Bankes of Kingston Lacy. It is difficult to estimate the extent to which Young's discoveries assisted the French scholar Jean François Champollion (1790-1832), but it is likely that in many cases both these pioneers reached similar conclusions independently. In 1822 the list of alphabetic Egyptian characters that had been drawn up by Young was corrected and greatly enlarged by Champollion, who, between that date and the year of his death, correctly deciphered the hieroglyphic forms of the names and titles of most of the Roman Emperors, and drew up a classified list of Egyptian hieroglyphs, and formulated a system of grammar and general decipherment which is the foundation whercon all later Egyptologists have worked.

The decipherment of proper names, although providing the key to the system of writing, could not have led to an understanding of the Egyptian language without the assistance of Coptic. Christian descendants of the ancient Egyptians are called Copts, a name which is only a corruption of the Greek 'Aiguptos', 'Egypt'; the translations of the Holy Scriptures, liturgies and other sacred writings which they made from Greek into their native tongue are written in the Greek script supplemented by seven characters derived from Demotic. The knowledge of Coptic has never been lost, and its literature has always been available in manuscripts for study by scholars. Champollion, whilst still a youth in the early years of the nineteenth century, realized the great importance of Coptic for the purpose of Egyptian decipherment, and he studied it to such good purpose that he was able to identify very many of the Egyptian words which he could read with their Coptic equivalents. In his studies of the inscription on the Rosetta

found in Greek on the Philæ Obelisk, and the cartouche which was assumed to contain the Egyptian equivalent of this name appears in this form:



Taking the cartouches which were supposed to contain the names of Ptolemy and Cleopatra from the Philæ Obelisk, and numbering the signs we have:

Ptolemy, A.

Cleopatra, B.



Now we see at a glance that No. 1 in A and No. 5 in B are identical, and judging by their position only in the names they must represent the letter P. No. 4 in A and No. 2 in B are identical, and arguing as before from their position they must represent the letter L. As L is the second letter in the name of Cleopatra, the sign No. 1 must represent K. Now in the cartouche of Cleopatra we know the values of Signs Nos. 1, 2 and 5, so we may write them down thus:

In the Greek form of the name of Cleopatra there are two vowels between the L and the P, and in the hieroglyphic form there are two hieroglyphs, and , so we may assume that = E and = O. In some forms of the cartouche of

Cleopatra No. 7 is replaced by , which is identical with No. 2 in A and No. 10 in B. As T follows P in the name Ptolemy, and as there is a T in the Greek form of the name of Cleopatra, we may assume that and have substantially the same sound, and that that sound is T. In the Greek form of the name Cleopatra there are two A's, the positions of which agree with No. 6 and No. 9, and we may assume that








has the value of A. Substituting these values for the hieroglyphs in B we may write it thus:

Thomas Young noticed that the two signs  always followed the name of a goddess, or queen, or princess, and the other early decipherers regarded the two signs as a mere feminine termination. The only sign for which we have no phonetic equivalent is No. 8  and it is obvious that this must represent R. Inserting this value in the cartouche we have the name of Cleopatra deciphered. Applying now the values which we have learned from the cartouche of Cleopatra to the cartouche of Ptolemy we may write it thus:





We now see that the cartouche must be that of Ptolemy, but it is also clear that there must be contained in it many other hieroglyphs which do not form part of his name. Other forms of the cartouche of Ptolemy are found, even on the Stone, the simplest of them written thus: It was therefore


evident that the other signs    were royal titles corresponding to those found in the Greek text on the Rosetta Stone meaning 'ever-living, beloved of Ptah'. Now the Greek form of the name Ptolemy, i.e. Ptolemaios, ends with S. We may assume therefore that the last sign in the simplest form of the cartouche given above has the phonetic value of S. The only hieroglyphs now doubtful are  and , and their position in the name of Ptolemy suggests that their phonetic values must be M and some vowel sound in which the I sound predominates. These values, which were arrived at by guessing and deduction, were applied by the early decipherers to other cartouches, e.g.:




Now, in No. 1, we can at once write down the values of all the signs, viz., P. I. L. A. T. R. A., which is obviously the Greek name Philoteria. In No. 2 we know only some of the hieroglyphs, and we write the cartouche thus:













It was known that  occurs in the name Berenice, and that it represents N, and that  is the last word of the transcript of the Greek title 'Kaisaros', and that it therefore represents




some S sound. Some of the forms of the cartouche of Cleopatra begin with , and it is clear that its phonetic value must be K. Inserting these values in the above cartouche we have:





(A L K S  N T R S)









which is clearly meant to represent the name 'Alexandros', or Alexander. The position of the sign  shows that it represented some sound of E or A.

Returning to the signs     which we have assumed to represent the royal titles 'ever-living, beloved of Ptah', we have to decide whether this assumption be correct or not. It was known by tradition and from Coptic that the old Egyptian word for 'life' or 'living', was 'ānh', or 'ōnh', and that it was represented by the symbol  which occurs several times in the inscriptions. It was therefore guessed that

the next signs  meant 'ever'. Coptic again showed that one of the old Egyptian words for 'ever, age, eternity', was 'djet', and as we already know that the phonetic value of the second sign in the word is T, we may assume that the value of  is DJ. The third sign  is a 'determinative', and was not pronounced. Thus the first title   means 'living ever',

or 'ever-living'. Of the remaining signs    we know that the first two are P and T, i.e. the first two letters of the name

of Ptah; the third sign  must then have the value of H or something like it. If the signs   form the name of Ptah, then the sign which follows them must mean 'loving', or 'loved'. Here again the Coptic helped the early decipherers in assigning a phonetic value to , for the Coptic word for 'to love' is 'mere', *μερε*, and they assumed that the value of the sign was 'mer'. Now in the cartouche of Ptolemy on the

Rosetta Stone after the name Ptah  , we have the signs  , and these are, clearly, a variant of . We already know that  = I, and therefore  must be the equivalent of 

and have the value of 'mer'. By the comparison of texts containing variant forms, and by the skilful use of his knowledge of Coptic, Champollion succeeded in formulating the system of decipherment of Egyptian hieroglyphs that is, substantially, that in use at the present day.

THE CONTENTS OF THE INSCRIPTION ON THE ROSETTA STONE

The inscription on the Rosetta Stone is a copy of the Decree passed by the General Council of Egyptian priests assembled at Memphis to celebrate the first commemoration of the coronation of Ptolemy V, Epiphanes, King of all Egypt. The young king had been crowned in the eighth year of his reign, therefore the first commemoration took place in the ninth year, in the spring of the year 196 B.C. The original form of the Decree is given by the Greek section, and the Hieroglyphic and Demotic versions were made from it.

The inscription is dated on the fourth day of the Greek month Xandikos (April), corresponding to the eighteenth day of the Egyptian month Meshir, or Mekhir, of the ninth year of the reign of Ptolemy V, Epiphanes, the year in which Aetus, the son of Aetus, was chief priest and Pyrrha, the daughter of Philinus, and Areia, the daughter of Diogenes, and Irene, the daughter of Ptolemy, were chief priestesses. The opening lines are filled with a list of the titles of Ptolemy V, and a series of epithets which proclaim the king's piety towards the gods, and his love for the Egyptians and his country. In the second section of the inscription the priests enumerate the benefits which he had conferred upon Egypt, which may be thus summarized:

1. Gifts of money and corn to the temples.
2. Gifts of endowments to temples.
3. Remission of taxes due to the Crown.
4. Forgiveness of debts owed by the people to the Crown.
5. Release of the prisoners who had been languishing in gaol for years.
6. Abolition of the press-gang for sailors.
7. Reduction of fees payable by candidates for the priesthood.
8. Reduction of the dues payable by the temples to the Crown.

9. Restoration of the services in the temples.
10. Forgiveness of rebels, who were permitted to return to Egypt and live there.
11. Despatch of troops by sea and land against the enemies of Egypt.
12. The siege and conquest of the town of Shekan (Lycopolis).
13. Forgiveness of the debts owed by the priests to the Crown.
14. Reduction of the tax on byssus.
15. Reduction of the tax on corn lands.
16. Restoration of the temples of the Apis and Mnevis Bulls, and of the other sacred animals.
17. Rebuilding of ruined shrines and sacred buildings, and providing them with endowments.

As a mark of the gratitude of the priesthood to the king for all these gracious acts of Ptolemy V, it was decided by the General Council of the priests of Egypt to 'increase the ceremonial observances of honour which are paid to Ptolemy, the ever-living, in the temples'. With this object in view it was decided:

1. To make statues of Ptolemy in his character of 'Saviour of Egypt', and to set up one in every temple of Egypt for the priests and people to worship.
2. To make figures of Ptolemy (in gold), and to place them in gold shrines, which are to be set side by side with the shrines of the gods, and carried about in procession with them.
3. To distinguish the shrine of Ptolemy by means of ten double-crowns of gold which are to be placed upon it.
4. To make the anniversaries of the birthday and coronation days of Ptolemy, viz., the XXXth day of the month Mesore and the XVIIth day of Paophi, festival days for ever.
5. To make the first five days of the month of Thoth days of festival for ever; offerings shall be made in the temples, and all the people shall wear garlands.

6. To add a new title to the titles of the priests, viz., 'Priests of the beneficent god Ptolemy Epiphanes, who appeareth on earth', which is to be cut upon the ring of every priest of Ptolemy, and inserted in every formal document.
7. That private individuals may borrow the shrines with figures of Ptolemy inside them from the temples, and may take them to their houses, and carry them about in procession.
8. That copies of this Decree shall be cut upon slabs of basalt in the 'writing of the speech of the god', i.e. hieroglyphs, and in the writing of the books, i.e. demotic, and in the writing of the Ueienin, i.e. Greek. 'And a basalt slab on which a copy of this Decree is cut shall be set up in the temples of the first, second and third orders, side by side with the statue of Ptolemy, the ever-living god.'

GREECE

A. H. SMITH

THE ELGIN MARBLES

(FROM 'LORD ELGIN AND HIS COLLECTION', THE JOURNAL OF HELLENIC STUDIES, Vol. XXXVI, 1916)

The Parthenon, the beautiful temple to the goddess Athena standing high on the rocky Acropolis at Athens, was completed in the year 432 B.C. After five hundred years Plutarch wrote, 'Every work of the time of Pericles had from the moment of its creation the beauty of an old master, but yet it retains its freshness and newness to this day. There is a certain novelty that seems to bloom upon them, which ever keeps their beauty untouched by time; as if they had perpetual breath of life, and an unaging soul mingled in their composition.'

By destruction alone could Time harm the unaging glory of those monuments and Time in this respect has been merciless. One by one the beautiful buildings have been destroyed and fallen into ruin. The Parthenon proudly withstood the ravages of the centuries until A.D. 1687 when in the petty wars between Venetian and Turk a shell exploded in the Temple (then a Mosque) and reduced it, too, to ruins.

For some years the freshness and the beauty of these shattered buildings lay forgotten, but not so the memory of them. Travellers from western Europe came to admire the sad vestiges of ancient Greece. And then at last the seventh Earl of Elgin, when he was made Ambassador at Constantinople, determined to make a collection of moulds and casts and drawings before it was too late, and so preserve some memory, in England, of the past glories of the time of Pericles. He chose a team of experts and sent them to Athens. It was not his intention to add to the spoliation of the monuments by removing the sculpture, but when his agents found that daily the contempt and carelessness of the authorities was leading to total destruction, he obtained permission from the Turkish authorities to remove the marbles themselves.

The following are extracts from an account by A. H. Smith published in the *Journal of Hellenic Studies*, entitled 'Lord Elgin and his Collection', and give some idea of the tremendous undertaking upon which Lord Elgin embarked.

The collection was made between 1801 and 1812 and consisted mainly of the sculptures from the Acropolis. During this time Lord Elgin himself was taken prisoner by the French and held for three years; one of his ships containing a precious load was wrecked; pirates and brigands abounded; Turkish and French intrigue hampered his agents; but despite all difficulties the marbles were brought to London, and eventually bought for the nation. To-day, this wonderful collection from classical Greece can be seen in the British Museum.

THE present year, A.D. 1916, is the centenary of the acquisition by the public of the Elgin Collection of ancient sculptures, inscriptions, casts and drawings. It has therefore seemed a suitable moment to print a fuller account than has hitherto been attempted of the formation and purchase of that collection.

I should state that I have been engaged on this subject for some time past, by desire of the Earl of Elgin, who has put all his papers bearing on the subject into my hands.

Thomas Bruce, seventh Earl of Elgin, and eleventh Earl of Kincardine, was born on 20 July 1866, being the second son of Charles, fifth Earl of Elgin, who married Martha, the only child of Thomas White, a London banker. The fifth Earl died in May 1771, and was succeeded by his eldest son, William Robert, an infant who was born in 1764, held the title for two months, and died in 1771 at the age of seven. He was succeeded by his brother Thomas, a few days under the age of five.

Lord Elgin, the subject of this paper, was educated at Harrow (where he stayed for a short time only) and at Westminster. He also studied at St. Andrew's, and at Paris, where he acquired an excellent command of French. He entered the army in 1785, and without any active military service reached the rank of major-general in 1835. He was elected a Representative Peer of Scotland in 1790 and continued in that position till 1807. He was again elected in 1820, and held the post till his death (14 November 1841).

He entered on his diplomatic career in 1790, when he was sent on a special mission to the Emperor Leopold. He was made Envoy at Brussels in 1792; Envoy Extraordinary at Berlin in 1795; and Ambassador at the Porte in 1799.

By his appointment to the Constantinople Embassy and his tenure of that post during the Egyptian Expedition of Napoleon, the seventh Lord Elgin was made a leading actor in many great events. More particularly, however, his mind was turned from the outset towards those pursuits with which his name and reputation are associated. The source of the suggestion that he should connect his term of office with the study of antiquity was explained by himself in his evidence before the Select Committee which considered the purchase of his collection. He stated that it was in the year 1799, and on the occasion of his nomination to the Embassy at Constantinople, that the idea first occurred to him of making his term of office of service to the arts. Mr. Thomas Harrison, an architect (1744-1829), who was working for him in Scotland, and who had passed much of his life in Rome, represented that, though the public had a general knowledge of the remains of Athens, there was nothing that would serve as well as casts from the actual objects.

Upon that suggestion, I communicated very fully with my acquaintance in London. I mentioned it to Lord Grenville, Mr. Pitt, and Mr. Dundas, upon the idea that it was of such national importance as that the Government might be induced to take it up, not only to obtain the object, but also to obtain it by the means of the most able artists at that time in England. The answer of the Government, which was entirely negative, was, that the Government would not have been justified in undertaking any expense of an indefinite nature, particularly under the little probability that then existed of the success of the undertaking. Upon that understanding I applied to such artists here as were recommended to me as likely to answer the purpose, in particular to Mr. Turner, to go upon my own account. Mr. Turner's objection to my plan was, that as the object was of a general nature, and that the condition I insisted upon was, that the whole results of all the artists should be collected together and left with me, his objection was that he wished to retain a certain portion of his own labour for his own use; he moreover asked between seven and eight hundred pounds of salary, independently of his expenses being paid, which of course was out of my reach altogether; therefore nothing was done here preparatory to the undertaking at all.

J. M. W. Turner was twenty-four years old at the time in question. He was already well known as a topographical draughtsman, whose work was engraved by the topographical publishers. He had not yet visited the Continent, but in his

tour to the North of England he had made many friends of influence. It was therefore quite natural that Lord Elgin, when in need of an artist, should think of Turner. Had he engaged him in place of Lusieri, it is probable that more drawings would have been completed, but it is certain that the Elgin collection of marbles would never have been made.

One of the friends who was consulted on the question of a draughtsman was a predecessor at the Constantinople Embassy, Sir Robert Ainslie, who during the years 1776-92 had employed an artist, Ludwig Mayer, for a very similar purpose. Mayer's *Views in Egypt, Palestine, and other parts of the Ottoman Empire* (1804), being a series of pleasing, coloured aquatint sketches in Egypt, Palestine, and Asia Minor, is still a frequent item in the lists of the second-hand booksellers.

Sir Robert Ainslie wrote to Lord Elgin to explain the terms of Mayer's engagement—namely, a salary of fifty guineas per annum, together with board and travelling expenses.

It was clearly understood that the whole of his works, drawings, pictures and sketches were to remain with me, as being my sole property. . . . I entirely agree with your Lordship in objecting to the conditions proposed by the artists who wish to accompany your Lordship to Turkey. To me it appears that the permission of Engraving any of the sketches, either in Turkey or elsewhere, ought to depend upon your Lordship's pleasure and ulterior determination.

Encouraged by such advice, Lord Elgin postponed the choice of a draughtsman until he had started from England. . . .

Lord Elgin started on his mission in 1799.

He had appointed William Richard Hamilton as his private secretary and, as will be seen hereafter, much of the success of his enterprise was to turn on Hamilton's zeal for the objects in view and his loyal friendship for his chief.

Arrived in Sicily, Lord Elgin opened communications, upon the recommendation of the then British Minister, Sir William Hamilton, with Giovanni Battista Lusieri, who was destined to be the agent to whose exertions the formation of the collection was, as we shall see, principally due. On 24 October 1799, Lusieri, then at Taormina, wrote to Lord Elgin explaining his position. He had found himself compelled, by the losses that he had suffered in the wars then in progress, to accept the position of King's Painter for the antiquities of Sicily, and was at present

performing the duties of that post. It was therefore necessary that he should obtain superior permission, which, however, he thought would be granted without difficulty. He undertook to take steps to that end, and to go as quickly as possible to Messina to confer with Lord Elgin. The offer was cordially accepted by Lord Elgin, writing from Messina on the 15th. On October 18th, the meeting took place, and an agreement was speedily reached.

(Hamilton was busy engaging further members for the expedition and musicians and others to accompany Lord Elgin to Constantinople.)

Hamilton writes:

It was singular that all Rome could not afford a single *designateur de figures* among its Natives, that was even of ordinary Ability. We have selected one who is on all hands acknowledged to be the best in this line, of excellent character and good Manners. Perhaps he is the only man of taste his Nation ever produced; he is a Tartar and Native of Astracan, educated in Germany, and having studied eight years in Rome. His salary £100 per annum.

With regard to the Architect we have also a Roman who has universally the character of being the most scientific, and of drawing with the greatest Elegance and taste of any of his profession in Rome. If the countenance of our Tartar is extraordinary from the characteristic features of his Nation, our Architect is no less a singular Object, being an extremely deformed Humpback: the head however and hand were the objects of our Search. As on talking over the Subject with him and others we found it impossible that *one* man could engage in the Undertaking, we have agreed that he shall take with him a young Man accustomed to study under him as a Scholar, and we have fixed his salary at 500 Roman Piastres, or £125 per ann.

We have fortunately found an armed English Merchantman that is going in a few days to Messina. In this we shall take our passage, and there I hope to meet with the English convoy which is not yet come into the Sicilian or Italian Ports. The weather is now too unsettled to venture to cross to Sicily in the small Vessels of the country which indeed are all laid up for the Season.

I have also procured at Naples a *Maitre de Chapelle*, with all the Qualities your Lordship had desired to find in him except the Inclination to appear occasionally as Groom of the Chamber, and as he is a very well-mannered young Man I did not think it proper to press it on him, particularly as I learned from every Quarter, that Persons of his Profession would with the natural Vanity of this people rather starve thro' Want, than stoop to such

an imaginary Degradation. With regard to the two French-horns, the Clarionet, and the Violincello, it will I believe be feasible tho' difficult to prevail on them to wear a Livery, or at least a separate Uniform, which would, I suppose, answer fully as well. . . .

I am surprised not to have already heard of your Lordship's Arrival at Constantinople—but in this Corner of Europe we are almost completely excluded from communication with the rest, and what little we have is extremely slow and uncertain.

And so, at length, about 9 April 1800, after nearly six months of preparatory work in Italy and Sicily, Hamilton, Lusieri, and the other members of the expedition were able to set sail from Syracuse, for Constantinople, or for Athens. Careful instructions in twenty-two paragraphs were drawn up by Hamilton for the guidance of the *Signori Artisti* who were going direct to Athens. They were to start as arranged from Sicily for the Dardanelles; to proceed from the Dardanelles to Zea, and from Zea as soon as possible to Athens, where they would put themselves under the guidance of the British Consul, Logotheti. After visiting the antiquities, all would begin to work at their respective occupations. Balestra and Ittar, the two architects, would take measurements of the best preserved buildings, and would work out their drawings in case of bad weather; when the chief drawings were finished they would search for the ground-plans of buried ruins. They would also make careful drawings of all sorts of architectural details, and would write a description of what they had observed. If in their searches they found any pieces of ancient sculpture, they would consign them to Logotheti. Feodor meanwhile would make drawings on the scale that he thought most appropriate of all the better sculpture—also sketches of mediocre sculpture, to illustrate the progress or decadence of the art. Occasionally in bad weather the artists would draw costumes. The *formatori* would mould the sculpture that Feodor and Bernardino, the draughtsmen, thought the best. Rosati, the second *formatore*, would be under the orders of Bernardino. All the company would give their best attention to the acquisition of sculpture deserving transportation. The *formatori* would also mould small details chosen by Balestra; the moulds, carefully packed, would be put in the charge of the Consul, and no casts would be taken from them. Necessary money would be obtained from the Consul, who should also be consulted, if they were obliged to move on account of malaria. 'It is impossible to conclude

these instructions without adding that all anxiously expect the worthy fruit of the expedition of such a company of chosen artists, who have already given such great proofs of their respective talents. . . .

The Athens of 1800, the destined scene of Lusieri's activities, was a small and squalid town. It occupied an area immediately to the north and east of the Acropolis, whose boundaries can still be distinguished by the pedestrian tourist, or on inspection of a modern map, by the narrowness and intricacy of its streets and lanes. It was not yet pierced by the two chief thoroughfares, known by the names of Hermes and Aiolos respectively, which were among the earliest works of the Bavarian engineers of the new kingdom. The present Constitution Square and the Palace Garden were an accidental clear space on the borders of the town. A Turkish wall, some ten feet high and having six gates, enclosed the whole of the town, the Temple of Theseus and the Acropolis. In its then form it dated from 1780, and its principal purpose had been to protect the inhabitants from the incursion of pirates and robbers. Between the houses and the town walls was a wide *pomoerium*, described by Hobhouse as an open space between the walls and the city, one hundred and fifty or two hundred yards in breadth, laid out in corn grounds, while other parts served as gardens, attached to some of the principal houses.

The number of houses in Athens was supposed to be between twelve and thirteen hundred; of these about four hundred were inhabited by Turks, the remainder by Greeks and Albanians, the latter of whom occupied about three hundred houses. There were also seven or eight Frank families, under the protection of the French Consul. None of the houses was well built or commodious, and the streets were all narrow and irregular. Hotels, of course, were as yet undreamt of. Even in 1810 Hobhouse writes of a scheme to provide Athens with a tavern, 'a novelty surely never before witnessed at Athens', as if it were a daring venture. The Frank traveller either hired a house, or enjoyed (for a consideration) the hospitality of some resident, such as Logotheti, or Theodora Macri, the daughter of his predecessor in office. Rooms could also be hired at the Capuchin Monastery which stood for western civilization. It possessed a pleasant garden, and incorporated in its buildings the choragic Monument of Lysicrates, the interior of which served the superior as a book closet and library.

The chief buildings at Athens, about which Lusieri's operations turned, were not many in number.

On the Acropolis or citadel, the principal monument was the Parthenon, or temple of the Virgin Goddess Athena. It had been built at the crowning period of the glory of Athens (between 447 and 431 B.C.) during the administration of Pericles, and under the direction of Ictinos, the architect, and Pheidias, the sculptor. Its sculpture consisted firstly of groups in the round in the gables or pediments. In each case only a sorry remnant was left at the end of the eighteenth century in comparison with the original composition, yet such as they are they form the noblest group of ancient sculptures that time has left. Secondly, there were the square panels sculptured in high relief, the metopes, on the external order. Finally, there was the incomparable frieze, with the scene of the Panathenaic procession, which surrounded the central chamber. From the fall of Paganism to the Turkish conquest, the Parthenon had served as a church of the Virgin Mary. From the Turkish conquest onwards it had been a mosque. Its chief catastrophe had taken place in 1687 at the time of a Venetian siege, when the centre of the building was destroyed by a powder explosion. In Lord Elgin's time a small makeshift mosque was irregularly built on a part of the temple floor.

The other chief building on the Acropolis was the Erechtheum. This is a curiously complex group of sanctuaries incorporated in a single building of about 400 B.C. of great refinement and beauty. In the eighteenth century it served as the house of the Disdar.

The Propylæa were the famous gateways and approaches to the Acropolis. On a projecting bastion of the Propylæa the temple of Wingless Victory (Athena Nike, or Nike Apteros) had once stood. It had been pulled down and its foundations had been incorporated in the Turkish works in the course of the preparations to resist the Venetian attack in 1687. Some of the slabs of its frieze were built into the walls of the Propylæa. The temple was reconstructed in its original position in 1835.

In the lower town the Theseum was a Doric temple, which had survived in excellent state as a church. Its sculptures consisted of metopes on and adjoining to the eastern end, and a frieze in high relief at each end of the temple.

The little monument dedicated by Lysicrates in honour of a

musical victory has been already mentioned as incorporated with the buildings of the Capuchin Monastery. This list of course does not exhaust the monuments of Athens, but it includes those which appear most frequently in the course of the correspondence.

(The team under Lusieri worked away in Athens making casts and drawings and eventually gained possession of two noted marble monuments from the Church of St. George at Cape Sigeum. These two pieces formed the nucleus of the Elgin collection. They were working under difficulties however, as reported by Dr. Hunt, Chaplain to the Embassy at Constantinople.)

Of the Temples of Minerva, Theseus and Neptune, I can say nothing that would convey an idea of the effect they produce. They must be seen to know what the union of simplicity and beauty is capable of: and after having feasted the eyes with those exquisite specimens of Athenian Architecture, every deviation from them, even the edifices of Rome itself will almost disgust. Lusieri, tho' born on the banks of the Tiber, and attached as he was to the proud remains of the Mistress of the World, is now an enthusiastic Admirer of the Doric Buildings here, and turns with disgust from the works of Hadrian or Herodes Atticus, and everything on the Roman model.

He is employing his pencil on two general views of Athens, one from the Pnyx, the other from Mount Anchesmus (i.e. Lycabettos), which will embrace all the monuments and classic spots of the Citadel and the Town. He has also commenced near views of the Temples of Theseus, Minerva, and Pandrosos. Positive Firmans must, however, be obtained from the Porte, to enable the Architects and Modellers to proceed in their most interesting labours. Unfortunately the Temple of Minerva, called the Parthenon, and those of Neptune Archtheus, of Minerva Polias, and Pandrosos, as well as the famous Propylæa, are all within the walls of the Acropolis, now a Turkish fortress, garrisoned by mercenary and insolent Janissaries, so that every obstacle which National jealousy and Mohometan bigotry, seconded by French intrigue, could produce, have been too successfully used to interrupt their labours. Till those Firmans are obtained, the bas-reliefs on the frieze, and the Groupes on the Metopes can neither be modelled nor drawn. The architects, therefore, in the meantime, are proceeding to make the elevations and ground plans, from the measures they had taken, and the Calmuc Theodore [Feodor, the draughtsman] employs his almost magic pencil in copying such remains of Sculpture as are beyond the walls of the citadel.

Up to this point, no ambitious designs of collecting the marbles had taken shape. Lord Elgin said before the Committee:

My whole plan was to measure and to draw everything that remained and could be traced of architecture, to model the peculiar features of architecture; I brought home a piece of each description of column for instance, and capitals and decorations of every description; friezes and moulds, and in some instances, original specimens; and the architects not only went over the measurements that had been before traced, but by removing the foundations were enabled to extend them and to open the way to further enquiries, which have been attended since with considerable success.

A nearer acquaintance, however, with the actual conditions soon began to influence Lord Elgin's mind.

From the period of Stewart's [an earlier traveller] visit to Athens till the time I went to Turkey, a very great destruction had taken place. There was an old temple on the Ilissus which had disappeared . . . every traveller coming, added to the general defacement of the statuary in his reach: there are now in London pieces broken off within our day. And the Turks have been continually defacing the heads; and in some instances they have actually acknowledged to me, that they have pounded down the statues to convert them into mortar. It was upon these suggestions and with these feelings, that I proceeded to remove as much of the sculpture as I conveniently could; it was no part of my original plan to bring away anything but my models.

(Eventually it was possible to negotiate with the Porte and a firman was issued.)

The terms of the new firman are published in the report of the Select Committee and elsewhere. It is in two parts, firstly reciting the prayer of the petitioner, and secondly granting it, point by point. The purport of the whole is sufficiently summarized in the evidence of Dr. Hunt.

It began by stating that it was well known to the Sublime Porte that foreigners of rank, particularly English noblemen and gentlemen, were very anxious to visit and examine the works of ancient art in Greece; particularly the Temples of the Idols; that the Porte had always gladly gratified that wish; and that in order to show their particular respect to the Ambassador of Great Britain, the august ally of the Porte, with whom they were now

and had long been in the strictest alliance, they gave to his Excellency, and to his Secretary and the artists employed by him, the most extensive permission to view, draw and model the ancient temples of the idols and the sculpture upon them, and to make excavations, and to take away any stones that might appear interesting to them.

(With permission from the Porte—the work of salvaging and accumulating marbles began in earnest, Hunt reports.)

The inscriptions on the Acropolis were collected, including the treasure lists and other important Athenian documents now in the Elgin collection. The Caryatid porch of the Erechtheum was cleared of disfiguring accretions. 'The Cariatids that support it, and the rich ornaments of its cornice and ceiling, are now open to the day. If your Lordship,' Hunt continues, 'would come here in a large Man-of-War that beautiful little model of ancient art might be transported wholly to England. Nothing can exceed the exquisite beauty and delicacy of all its details.' A block of the Erechtheum cornice was taken down. On July 31st the Parthenon was first approached.

To-day the Ship-Carpenter and five of the Crew mounted the walls of the Temple of Minerva, and by the aid of Windlasses, Cordage and twenty Greeks, they succeeded in detaching and lowering down, without the slightest accident, one of the Statues or Groupes in the Metopes representing a combat between a youth (probably Theseus) and a Centaur; it has long been the admiration of the world; indeed nothing can equal it for beauty and grace. . . . A second which adjoins it, on the same subject, is to follow it to-morrow. . . . He (the son of the Disdar) tells me Choiseul gave his Father Eight Hundred Piastres for the Metope which adjoined these, but that it was taken down with so little skill, that the rope broke, and it was dashed into a thousand fragments.

The second Alto Rilievo [Hunt continues after a pause, presumably on the next day] is now lowered, and with equal success; they are to be brought as soon as possible to the Consul's; where the Calmuc is to design them, and then they are to be put on board. When I saw those beautiful statues hanging in the air, and depending on Ragusan Cordage, I was seized with a trembling and palpitation, which only ceased when they arrived safe to the Ground.

Hunt's letter of July 31st closed with a triumphant post-script: 'The most beautiful of the statues is now in the Consul's yard. We have been forced to get a gun-carriage and train of thirty men to bring it down. The other will follow to-night.'

At the same time that he reported these successes, Lusieri added that the garrison, and even the Disdar, were continually destroying some part of the Parthenon, in order to extract the lead with which its cramps were fastened. 'I am sure that in half a century there will not remain one stone on another. It would be well, my Lord, to ask for all that is left, or else to do all that is possible to prevent their going on in this fashion.'

At Athens, Hunt and Lusieri had arranged for the immediate shipping of a part of the collection, and particularly of the two metopes, but the work took longer than had been anticipated, and Hunt was thus able to prolong his tour. He learnt by letter that so many difficulties had occurred in casing the marbles, and transporting them to the Piræus, that it would be useless to return to Athens for some days. He employed the interval in excursions to Chæronea, Thermopylæ and Delphi.

(About this time, 28 March 1802, Lord and Lady Elgin set out from Constantinople to visit the scene of operations in person.)

From Lady Elgin's letters we learn that the party left Constantinople on Sunday evening, March 28th. It consisted of Lord and Lady Elgin, the children, and the doctor (Dr. Scott) in a Ragusan vessel; Colonel Murray and Hunt in the English brig which was to give protection from pirates; and there was also 'a little ship filled with the Maltese that Elgin is sending to Malta'. The passage was rough—I believe Bruce was almost the only person on board who was neither sick nor frightened.' The Dardanelles were passed on the 31st. On April 1st it was still blowing hard, and Lady Elgin insisted on going ashore in the Bay of Mandria (i.e. Porto Mandri, or Thoricus, in the south-east of Attica). The children were left in the ship, and the night was passed in a tent pitched in a cave.

Some peasants told us that there were an amazing number of Pirates, and that the night before, eighteen of them had landed at *our cave* and carried away a Woman. However the Woman returned that morning, and said that if she had had another woman *like* herself, they two could have driven away the Robbers. We had plenty of Janissaries and lighted two large Fires close to our Tent to drive away the damps. We passed the night unmolested.

But the brig, which had stopped at Tenedos to take in wine, had been quite lost sight of, and it was therefore determined

that the children should not remain in the Ragusan ship, unprotected from the pirates. With considerable difficulty, owing to the roughness of the sea, they also were brought ashore.

We had got from a neighbouring Village some Horses and Asses. You would have laughed had you seen the party. I was mounted upon an ass, Masterman *across* another, Mary's Paramana [i.e. wet-nurse] upon a third, and [there was also] a great fat washer-woman of mine who preferred walking to the horror of riding. . . . Thomas rode, and took Bruce up before him; Elgin and the Doctor walked. After six most tedious hours, scrambling over mountains, we arrived at the much wished for Village, where I expected to sleep *like a Queen!* But in this, Alas! I was sadly disappointed. We got to a *Han*, the people lighted a large fire in the middle, but not a crevice was left for the smoke to escape. I took possession of that Han for myself, Bratts, and Damsels; Elgin and the Doctor went into another. We expected to pass a most delightful night and arranged our Beds with great glee, but no sooner had we flung our weary limbs upon them than we were assailed in such a manner by flees not one of us could shut our eyes, it was quite dreadful for the poor Children. They were danced out of their beds every two minutes in order to catch the Flees. The next morning we all mounted as before, only we contrived two baskets, into which we put our Babs well bolstered up. The people told us we were nine hours' ride from Athens. We came to a village where we stopped and dined. Then we deposited our little treasures in the baskets and off we set. Lusieri and Monsieur Logothetté came to meet us, we were all sadly tired with this day's journey. I really thought of getting off my horse and laying down, for I never was so faged. It was between eight and nine o'clock when we arrived at Athens, and perfectly dark. Besides there was a great dew falling which made me very uncomfortable about Elgin. As for the children we wrapped them quite up and they arrived as fresh and lively as possible, I never saw them look so well as they do here.

On the 15th Lady Elgin wrote again. She had paid a sort of state visit to the Bath.

This morning I made myself as smart as possible, and having given some days notice that I intended *honoring* the Bath with my presence, I am sure there were three or four hundred Women, Greeks and Turks. Altho' I had formed a very pretty idea of the amusement, I must say it very far surpassed my expectation. Had you dancers, singers and Tambourine players in the Bath? The dancing was *too indecent* beyond anything. Mary shall not go to a Turkish Bath! We had a Ball here the other night. . . . We have all

this house to ourselves. The Logothetties have gone into another, which makes it much more comfortable to us; I have made Ham-merton's room the Nursery. Did you ever go up the outside flight of stairs? We have repaired the long room and put my Piano-forti into it, and we breakfast and sit reading, writing or arranging Medals in the Gallery. I have put a gate upon the top of the stairs, so there is a fine airy run for Bruce. We dine at two o'clock, and drive out in the *Curicle* every day after dinner. Tonight we dr[o]ve to the Monastery of Daphné, where you rode, [and] went all over it. I feel to know everything you *thought* and did here. But I have almost filled four pages without saying what I think of the Artist. I think the few things that remains, almost all having been sent to England, far more beautiful than ever I dared imagine. But with Lusieri I own I am disappointed, not one single view finished—nothing but innumerable Sketches, but too much of a sketch for me. . . . We expect Hamilton every day from Egypt, he has been away many months. I shall be happy when he returns.

(Having arrived in Athens, Lady Elgin remained to expedite the loading of shipments to England.)

The letters from Lady Elgin to her husband are largely filled with the comings and goings of naval officers:

After dinner, as the Doctor, Lusieri and I were musing over the vicissitudes of human life, who should dash in at the door but Dicky Johnstone! dear fellow. How do [you] do, My Lady, How is My Lord?—I saw by his face there was no answer necessary to those *Queries*, so, *says I*, have you dined Mr. Johnstone? No My Lady, *says he*, moping a most profuse quantity of human Nature off his red face and still redder hair—But I have brought Mr. *Tinker* and Mr. *Blinker* with me, I thought my Lady you dined at three o'clock, but a bit of Bread & Cheese is all we want, My Lady—I am sorry, *Sir*, you have asked for the only thing I cannot give you *viz.* Cheese—(A notorious Lye by the bye for to Day we made the first incision into the last of the Conee's [?] cheeses) but I can give you Soup, fish, Beef stakes, Veal, Mutton, Lamb, Ducks, Turkeys &c. &c. &c. Upon which I got trusty Maraask & *really* produced dinner enough to *fill* the beasts. The Doctor you may be sure did not fail to do ye honors! I had to Overtalk him once or twice, *no* easy matter p'on honor!

In the morning I sent a *very civil* message to Capt. Hoste saying I was sorry to hear he was so ill & if there was anything I cd send him it wd give me great pleasure. I then coaxed over the Lieut. to prevale upon the Captain to take the Three, large Cases you saw in the Magazine. I told him they were seven feet long; he gave me little hopes, as it was impossible to put any thing above three

feet long in the hold. I then found it necessary to use my persuasive powers, so I began by saying as the Capt. was going straight to Malta & there being no Enemies to encounter, I ventured to propose his taking them. It would be doing me a very great favor as you were extremely anxious to get them off, & I shd feel so proud to tell you how well I had succeeded during your absence—*Female* eloquence as usual succeeded, the Capt. sent me a very polite answer, & by peep of Day I send down the three Cases!

The Capt. is reading his Novel upon the Sopha and the Doctor is reading Herodote. . . . Nothing can be more obliging than he [the Captain] is, he saw the three cases at ye water side when he came up; having got them safely off my Hands, I next set to work to see if I could not contrive to get away something *more*. What say you to Dot? [her pet-name]. This is a Holliday, nobody will work, but I have offered *Backsheses*, Lusieri is all astonishment at me, he says he never saw anybody so keen as me.

I have made him set to work to pack up the Horse's head, the Urn and the stone that is in this house, a head, & the Capt. will take that also for me, he says he will stay to-morrow if it is any use—This is my grand Dinner day, the Count and his friend, the two Consuls, the Captain & Doctor, Lusieri & I—Dicky and three other officers came in this morning, but I took no notice of them & they are gone. . . . I have ordered the dinner & told Marco only to give *two Bottles* of Port, all the rest Zea; he told me with a long face that yesterday Dicky and his two friends drank three bottles of wine. They shall have as much Zea as they like, but no White wine, two Bottles of Port, no Porter, and not *a bit* of Cheese! Thomas, Piere & Marco wait at Table, three Boys run *to and fro* with the Dishes to the Kitchen, but are not to put their Noses in at the Door! I hear Dicky and his three Companions are above stairs, it is odd if they stay unasked by me, I have dinner enough—Have I not arranged all my affairs famously? . . . Capt. H. says he will take the packages he has got on board the Madras with him. He did not know he was really appointed till I send him word.

Eleven o'clock at night—

Now for some news that will please you. I have got another large case packed up this Day, a long piece of the Baso Relievo from ye Temple of Minerva, I forget the *proper term*, so I have by my management *got on board* four immense long heavy packages, & to-morrow the Horse's head &c. &c. is to be carefully packed up and sent on board; this is *all* that is ready for going. If there were twenty ships here nothing more could be sent for some time.—The *two last Cases* is *intirely* my doing, and I feel proud, Elgin!

And so, load by load, the marbles came to England.

GERMANY

HEINRICH SCHLIEMANN

A GERMAN BOY'S DREAM

(FROM ILIOS: CITY AND COUNTRY OF THE TROJANS. *John Murray*, 1880)

This is not a story of discovery but the story of the discoverer of Troy. Heinrich Schliemann tells us in his own words how as a small boy in the little town of Neu Buckow in Mecklenburg-Schwerin his imagination was fired with the tale of Troy. Where were the great walls and the Scæan Gate through which the unsuspecting Trojans dragged the wooden horse, where was Priam's Palace and the treasure, and where the plain upon which the long struggle for Helen was fought?

That little boy from Neu Buckow, almost penniless, and apprenticed to a grocer, decided that one day he would find and excavate Troy. Troy was his dream, and he worked as only someone inspired by a dream can work, and he made an immense fortune. At last, when middle-aged, he found and dug out his city.

The following extract is taken from the autobiographical introduction to his great book, *Ilios: the City and Country of the Trojans*.

IF I begin this book with my autobiography, it is not from any feeling of vanity, but from a desire to show how the work of my later life has been the natural consequence of the impressions I received in my earliest childhood; and that, so to say, the pick-axe and spade for the excavation of Troy and the royal tombs of Mycenæ were both forged and sharpened in the little German village in which I passed eight years of my earliest childhood. I also find it necessary to relate how I obtained the means which enabled me, in the autumn of my life, to realize the great projects I formed when I was a poor little boy. But I flatter myself that the manner in which I have employed my time, as well as the use I have made of my wealth, will meet with general approbation, and that my autobiography may aid in diffusing among the intelligent public of all countries a taste for those high and noble studies, which have sustained my courage during the hard trials of my life, and which will sweeten the days yet left me to live.

I was born on 6 January 1822, in the little town of New Buckow, in Mecklenburg-Schwerin, where my father, Ernst Schliemann, was Protestant clergyman, and whence, in 1823, he was elected in that capacity to the parish of the village of Ankershagen between Waren and Penzlin, in the same duchy. In that village I spent the eight following years of my life; and my natural disposition for the mysterious and the marvellous was stimulated to a passion by the wonders of the locality in which I lived. Our garden-house was said to be haunted by the ghost of my father's predecessor, Pastor von Russdorf; and just behind our garden was a pond called *das Silberschälchen*, out of which a maiden was believed to rise each midnight, holding a silver bowl. There was also in the village a small hill surrounded by a ditch, probably a prehistoric burial-place (or so-called *Hünengrab*); in which, as the legend ran, a robber knight in times of old had buried his beloved child in a golden cradle. Vast treasures were also said to be buried close to the ruins of a round tower in the garden of the proprietor of the village. My faith in the existence of these treasures was so great that, whenever I heard my father complain of his poverty, I always expressed my astonishment that he did not dig up the silver bowl or the golden cradle, and so become rich. There was likewise in Ankershagen a medieval castle, with secret passages in its walls, which were six feet thick, and an underground road, which was supposed to be five miles long, and to pass beneath the deep lake of Speck; it was said to be haunted by fearful spectres, and no villager spoke of it without terror. There was a legend that the castle had once been inhabited by a robber knight of the name of Henning von Holstein, popularly called 'Henning Bradenkirl', who was dreaded over the whole country, for he plundered and sacked wherever he could. But, to his vexation, the Duke of Mecklenburg gave safe-conducts to many of the merchants who had to pass by his castle. Wishing to wreak vengeance upon the duke, Henning begged him to do him the honour of a visit. The duke accepted the invitation, and came on the appointed day with a large retinue. But a cow-herd, who was cognizant of Henning's design to murder his guest, hid himself in the underwood on the roadside, behind a hill a mile distant from our house, and lay in wait for the duke, to whom he disclosed his master's murderous intention, and the duke accordingly returned instantly. The hill was said to have derived its present name, 'Wartensberg' or 'Watch-mount',

from the event. Henning, having found out that his design had been frustrated by the cowherd, in revenge fried the man alive in a large iron pan, and gave him, when he was dying, a last kick with his left foot. . . .

Though my father was neither a scholar nor an archæologist, he had a passion for ancient history. He often told me with warm enthusiasm of the tragic fate of Herculaneum and Pompeii, and seemed to consider him the luckiest of men who had the means and the time to visit the excavations which were going on there. He also related to me with admiration the great deeds of the Homeric heroes and the events of the Trojan war, always finding in me a warm defender of the Trojan cause. With great grief I heard from him that Troy had been so completely destroyed, that it had disappeared without leaving any traces of its existence. My joy may be imagined, therefore, when, being nearly eight years old, I received from him, in 1829, as a Christmas gift, Dr. Georg Ludwig Jerrer's *Universal History*, with an engraving representing Troy in flames, with its huge walls and the Scæan gate, from which Æneas is escaping, carrying his father Anchises on his back and holding Ascanius by the hand; and I cried out, 'Father, you were mistaken: Jerrer must have seen Troy, otherwise he could not have represented it here.' 'My son,' he replied, 'that is merely a fanciful picture.' But to my question, whether ancient Troy had such huge walls as those depicted in the book, he answered in the affirmative. 'Father,' retorted I, 'if such walls once existed, they cannot possibly have been completely destroyed: vast ruins of them must still remain, but they are hidden away beneath the dust of ages.' He maintained the contrary, whilst I remained firm in my opinion, and at last we both agreed that I should one day excavate Troy.

What weighs on our heart, be it joy or sorrow, always finds utterance from our lips, especially in childhood; and so it happened that I talked of nothing else to my play-fellows, but of Troy and of the mysterious and wonderful things in which our village abounded. I was continually laughed at by every one except two young girls, Louise and Minna Meincke, the daughters of a farmer in Zahren, a village only a mile distant from Ankershagen; the former of whom was my senior by six years, the latter of my own age. Not only did they not laugh at me, but, on the contrary, they always listened to me with profound attention, especially Minna, who showed me the greatest

sympathy and entered into all my vast plans for the future. Thus a warm attachment sprang up between us, and in our childish simplicity we exchanged vows of eternal love. In the winter of 1829-30 we took lessons in dancing together, alternately at my little bride's house, at ours, and in the old haunted castle, then occupied by the farmer Mr. Heldt, where, with the same profound interest, we contemplated Henning's bloody bust, the ominous joints of the awful fire-place, the secret passages in the walls, and the entrance to the underground road. . . .

From our dancing-lessons neither Minna nor I derived any profit at all, whether it was that we had no natural talent for the art, or that our minds were too much absorbed by our important archæological investigations and our plans for the future.

It was agreed between us that as soon as we were grown up we would marry, and then at once set to work to explore all the mysteries of Ankershagen; excavating the golden cradle, the silver basin, the vast treasures hidden by Henning, then Henning's sepulchre, and lastly Troy; nay, we could imagine nothing pleasanter than to spend all our lives in digging for the relics of the past.

Thanks to God, my firm belief in the existence of that Troy has never forsaken me amid all the vicissitudes of my eventful career; but it was not destined for me to realize till in the autumn of my life, and then without Minna—nay, far from her—our sweet dreams of fifty years ago.

My father did not know Greek, but he knew Latin, and availed himself of every spare moment to teach it me. When I was hardly nine years old, my dear mother died: this was an irreparable misfortune, perhaps the greatest which could have befallen me and my six brothers and sisters. But my mother's death coincided with another misfortune, which resulted in all our acquaintances suddenly turning their backs upon us and refusing to have any further intercourse with us. I did not care much about the others; but to see the family of Meincke no more, to separate altogether from Minna—never to behold her again—this was a thousand times more painful to me than my mother's death, which I soon forgot under my overwhelming grief for Minna's loss. In later life I have undergone many great troubles in different parts of the world, but none of them ever caused me a thousandth part of the grief I felt at the tender age of nine years for my separation from my little bride.

Bathed in tears and alone, I used to stand for hours each day before Olgartha von Schröder's portrait, remembering in my misery the happy days I had passed in Minna's company. The future appeared dark to me; all the mysterious wonders of Ankershagen, and even Troy itself, lost their interest for a time. Seeing my despondency, my father sent me for two years to his brother, the Reverend Freiderich Schliemann, who was the pastor of the village of Kalkhorst in Mecklenburg, where for one year I had the good fortune of having the candidate Carl Andres from Neu Strelitz as a teacher; and the progress I made under this excellent philologist was so great that, at Christmas 1832, I was able to present my father with a badly-written Latin essay upon the principal events of the Trojan war and the adventures of Ulysses and Agamemnon. At the age of eleven I went to the Gymnasium at Neu Strelitz, where I was placed in the third class. But just at that time a great disaster befell our family, and, being afraid that my father would no longer have the means of supporting me for a number of years, I left the Gymnasium after being in it only three months, and entered the *Realschule* of the same city, where I was placed in the second class. In the spring of 1835 I advanced to the first class, which I left in April 1836, at the age of fourteen, to become apprentice in the little grocer's shop of Ernest Ludwig Holtz, in the small town of Fürstenberg in Mecklenburg-Strelitz.

A few days before my departure from Neu Strelitz, on Good Friday 1836, I accidentally met Minna Meincke, whom I had not seen for more than five years, at the house of Mr. C. E. Laué. I shall never forget that interview, the last I ever had with her. She had grown much, and was now fourteen years old. Being dressed in plain black, the simplicity of her attire seemed to enhance her fascinating beauty. When we looked at each other, we both burst into a flood of tears and fell speechless into each other's arms. Several times we attempted to speak, but our emotion was too great; neither of us could articulate a word. But soon Minna's parents entered the room, and we had to separate. It took me a long time to recover from my emotion. I was now sure that Minna still loved me, and this thought stimulated my ambition. Nay, from that moment I felt within me a boundless energy, and was sure that with unremitting zeal I could raise myself in the world and show that I was worthy of her. I only implored God to grant that she might not marry before I had attained an independent position.

I was employed in the little grocer's shop at Fürstenberg for five years and a half; for the first year by Mr. Holtz, and afterwards by his successor, the excellent Mr. Theodor Hückstaedt. My occupation consisted in retailing herrings, butter, potato-whisky, milk, salt, coffee, sugar, oil, and candles; in grinding potatoes for the still, sweeping the shop, and the like employments. Our transactions were on such a small scale, that our aggregate sales hardly amounted to 3,000 thalers, or £450 annually; nay, we thought we had extraordinary luck when we sold two pounds' worth of groceries in a day. There I of course came in contact only with the lowest classes of society. I was engaged from five in the morning till eleven at night, and had not a moment's leisure for study. Moreover I rapidly forgot the little that I had learnt in childhood; but I did not lose the love of learning; indeed I never lost it, and, as long as I live, I shall never forget the evening when a drunken miller came into the shop. His name was Hermann Niderhöffer. He was the son of a Protestant clergyman in Roebel (Mecklenburg), and had almost completed his studies at the Gymnasium of Neu Ruppin, when he was expelled on account of his bad conduct. Not knowing what to do with him, his father apprenticed him to the farmer Langermann in the village of Dambeck; and, as even there his conduct was not exemplary, he again apprenticed him for two years to the miller Dettmann at Güstrow. Dissatisfied with his lot, the young man gave himself up to drink, which, however, had not made him forget his Homer; for on the evening that he entered the shop he recited to us about a hundred lines of the poet, observing the rhythmic cadence of the verses. Although I did not understand a syllable, the melodious sound of the words made a deep impression upon me, and I wept bitter tears over my unhappy fate. Three times over did I get him to repeat to me those divine verses, rewarding his trouble with three glasses of whisky, which I bought with the few pence that made up my whole fortune. From that moment I never ceased to pray God that by His grace I might yet have the happiness of learning Greek.

There seemed, however, no hope of my escaping from the hapless and humble position in which I found myself. And yet I was relieved from it, as if by a miracle. In lifting a cask too heavy for me, I hurt my chest; I spat blood and was no longer able to work. In despair I went to Hamburg, where I succeeded

in obtaining a situation with an annual salary of 180 marks, or £9 sterling: first in the grocer's shop of Lindemann junior, on the Fishmarket in Altona; and afterwards in that of E. L. Deycke junior, at the corner of the Münren and Matten-Twiete in Hamburg. But as I could not do the heavy work, owing to my weakness in the chest, I was found useless by my employers, and was turned away from each place, after having occupied it for only eight days. Seeing the impossibility of filling a situation as grocer's shop-man, and prompted by want to engage in any work, however humble, merely to earn my food, I endeavoured to obtain employment on board a ship, and at the recommendation of a very kind-hearted ship-broker, Mr. J. F. Wendt, a native of Sternberg in Mecklenburg, who when a child had been brought up with my late mother, I succeeded in obtaining a situation as cabin-boy on board the little brig *Dorothea*, commanded by Captain Simonson, owned by the merchants Wachsmuth and Kroogmann of Hamburg, and bound for La Guayra in Venezuela.

I had always been poor, but never yet so utterly destitute as at that time; I had even to sell my only coat in order to buy a blanket. On 28 November 1841, we left Hamburg with a fair wind; but in a few hours it turned contrary, and we were accordingly detained for three days in the River Elbe, near Blankensee, until on December 1st the wind again became fair. On that day we passed Cuxhaven and entered the open sea, but we had no sooner reached Heligoland than the wind returned to the west, and remained there up to December 12th. We were continually tacking, but made little or no progress, until in the night of December 11th-12th we were shipwrecked in a fearful storm off the island of Texel, on the bank called 'de Eilandsche Grond'. After escaping innumerable dangers, and having been tossed about by the fury of the elements for nine hours in a very small open boat, the crew, consisting of nine men, were all saved. I shall always remember with gratitude to Heaven, the joyful moment when our boat was thrown by the surf on a bank close to the shore of Texel, and all danger was over. I did not know the name of the land we had been cast upon, but I perceived that it was a foreign country. I felt as if on that bank a voice whispered to me that the tide in my earthly affairs had come, and that I had to take it at its flood. My belief was confirmed when, on the very day of our arrival, my little box, containing a few shirts and stockings,

as well as my pocket-book with the letters of recommendation for La Guayra procured for me by Mr. Wendt, was found floating on the sea and was picked up, while all my comrades and the captain himself lost everything. In consequence of this strange event, they gave me the nickname of 'Jonah', by which I was called as long as we remained at Texel. We were kindly received there by the consuls Sonderdorp and Ram, who proposed to send me, together with the rest of the crew, by way of Harlingen, back to Hamburg. But I declined to return to Germany, where I had been so overwhelmingly unfortunate, telling them that I regarded it as my destiny to remain in Holland, that I intended to proceed to Amsterdam to enlist as a soldier, for I was utterly destitute, and saw, for the moment, no other means of obtaining a living. At my urgent request, therefore, Messrs. Sonderdorp and Ram paid 2 guilders (3s. 4d.) for my passage to Amsterdam.

The wind having now changed to the south, the little vessel by which I was forwarded had to stay a day at the town of Enkhuyzen, and it took us no less than three days to reach the capital of Holland. For want of clothes I suffered fearfully on this passage. Fortune did not smile on me at first at Amsterdam: winter had set in; I had no coat, and was suffering cruelly from the cold. My intention to enlist as a soldier could not be realized so soon as I had imagined; and the few florins which I had collected as alms on the island of Texel and in Enkhuyzen, as well as the two florins which I obtained from Mr. Quack, the consult for Mecklenburg at Amsterdam, were soon spent in the tavern of Mrs. Graalman in the Ramskoy at Amsterdam, where I had taken my lodgings. As my means of living were entirely exhausted, I feigned illness and was taken into the hospital. From this terrible situation I was released by the kind shipbroker already mentioned, Mr. Wendt of Hamburg, to whom I had written from Texel, informing him of my shipwreck and my intention to try my fortune at Amsterdam. By a lucky chance my letter reached him when he was sitting at a dinner party with numerous friends. The account of the disaster which had befallen me excited universal compassion, and a subscription which he at once raised for me produced the sum of 240 florins (£20), which he sent me through Consul Quack. At the same time, he recommended me to the excellent Consul-General of Prussia at Amsterdam, Mr. W. Hepner, who procured me a situation in the office of Mr. F. C. Quien.

In my new situation my work consisted in stamping bills of exchange and getting them cashed in the town, and in carrying letters to and from the post office. This mechanical occupation suited me, for it left me time to think of my neglected education.

First of all I took pains to learn to write legibly, and this I succeeded in doing after twenty lessons from the famous calligraphist Magnée, of Brussels. Afterwards, in order to improve my position, I applied myself to the study of modern languages. My annual salary amounted only to 800 francs (£32), half of which I spent upon my studies; on the other half I lived—miserably enough to be sure. My lodging, which cost 8 francs a month, was a wretched garret without a fire, where I shivered with cold in winter and was scorched with the heat in summer. My breakfast consisted of rye-meal porridge, and my dinner never cost more than twopence. But nothing spurs one on to study more than misery and the certain prospect of being able to release oneself from it by unremitting work. Besides, the desire of showing myself worthy of Minna created and developed in me a boundless courage. I applied myself with extraordinary diligence to the study of English. Necessity taught me a method which greatly facilitates the study of a language. This method consists in reading a great deal aloud, without making a translation, taking a lesson every day, constantly writing essays upon subjects of interest, correcting these under the supervision of a teacher, learning them by heart, and repeating in the next lesson what was corrected on the previous day. My memory was bad, since from my childhood it had not been exercised upon any object; but I made use of every moment, and even stole time for study. In order to acquire a good pronunciation quickly, I went twice every Sunday to the English church, and repeated to myself in a low voice every word of the clergyman's sermon. I never went on my errands, even in the rain, without having my book in my hand and learning something by heart; and I never waited at the post office without reading. By such methods I gradually strengthened my memory, and in three months' time found no difficulty in reciting from memory to my teacher, Mr. Taylor, in each day's lesson, word by word, twenty printed pages, after having read them over three times attentively. In this way I committed to memory the whole of Goldsmith's *Vicar of Wakefield* and Sir Walter Scott's *Ivanhoe*. From over-excitement I slept but little, and employed my sleepless hours

at night in going over in my mind what I had read on the previous evening. The memory being always much more concentrated at night than in the day-time, *I found these repetitions at night of paramount use.* Thus I succeeded in acquiring in half a year a thorough knowledge of the English language.

I then applied the same method to the study of French, the difficulties of which I overcame likewise in another six months. Of French authors I learned by heart the whole of Fénelon's *Aventures de Télémaque* and Bernardin de Saint-Pierre's *Paul et Virginie*. This unremitting study had in the course of a single year strengthened my memory to such a degree, that the study of Dutch, Spanish, Italian, and Portuguese appeared very easy, and it did not take me more than six weeks to write and speak each of these languages fluently.

Whether from my continual readings in a loud voice, or from the affect of the moist air of Holland, my complaint in the chest gradually disappeared during my first year's residence in Amsterdam, and it has never returned. But my passion for study caused me to neglect my mechanical occupation in the office of Mr. F. C. Quien, especially as I began to consider it beneath me. My principals would give me no promotion; they probably thought that a person who shows his incapacity for the business of a servant in an office proves thereby his unfitness for any higher duties. At last, however, through the intercession of my worthy friends, Louis Stoll of Mannheim and J. H. Ballauf of Bremen, I had on 1 March 1844, the good fortune to obtain a situation as correspondent and book-keeper in the office of Messrs. B. H. Schröder & Co. of Amsterdam, who engaged me at a salary of 1,200 francs (£48); but when they saw my zeal, they added 800 francs a year more by way of encouragement. This generosity, for which I shall ever be grateful to them, was in fact the foundation of my prosperity, for, as I thought that I could make myself still more useful by a knowledge of Russian, I set to work to learn that language also. But the only Russian books I could procure were an old grammar, a lexicon, and a bad translation of *Les Aventures de Télémaque*. In spite of all my enquiries, I could not find a teacher of Russian, since, with the exception of the Russian Vice-Consul, Mr. Tannenberg, who would not consent to give me lessons, there was no one in Amsterdam who understood a word of the language. So I betook myself to the study of it without a master, and, with the help of the grammar, I

learned the Russian letters and their pronunciation in a few days. Then, following my old method, I began to write short stories of my own composition, and to learn them by heart. As I had no one to correct my work, it was, no doubt, extremely bad; but I tried at the same time to correct my mistakes by the practical exercise of learning the Russian *Aventures de Télémaque* by heart. It occurred to me that I should make more progress if I had some one to whom I could relate the adventures of Telemachus; so I hired a poor Jew for four francs a week, who had to come every evening for two hours to listen to my Russian recitations, of which he did not understand a syllable.

As the ceilings of the rooms of the common houses in Holland consist of single boards, people on the ground-floor can hear what is said in the third storey. My recitations therefore, delivered in a loud voice, annoyed the other tenants, who complained to the landlord, and twice while studying the Russian language I was forced to change my lodgings. But these inconveniences did not diminish my zeal, and in the course of six weeks I wrote my first Russian letter to Mr. Vasili Plotnikoff, the London agent for the great indigo-dealers, Messrs. M. P. N. Malutin Brothers, at Moscow, and I found myself able to converse fluently with him and the Russian merchants, Matwieff and Froloff, when they came to Amsterdam for the indigo auctions. After I had completed my study of the Russian language, I began to occupy myself seriously with the literatures of the languages I had learned.

In January 1846, my worthy principals sent me as their agent to St. Petersburg. Here, as well as in Moscow, my exertions were in the very first two months crowned with the fullest success, which far exceeded the most sanguine expectations of my employers and myself. No sooner had I rendered myself indispensable to Messrs. B. H. Schröder & Co. in my new career, and thus obtained a practically independent position, than I hastened to write to the friend of the Meincke family, Mr. C. E. Laué of Neu Strelitz, describing to him all my adventures, and begging him to ask Minna at once for me in marriage. But, to my horror, I received a month later the heart-rending answer, that she was just married. I considered this disappointment at the time was the greatest disaster which could have befallen me, and I was for some time utterly unfit for any occupation and sick in bed. I constantly recalled to mind all that had passed between Minna and myself in early

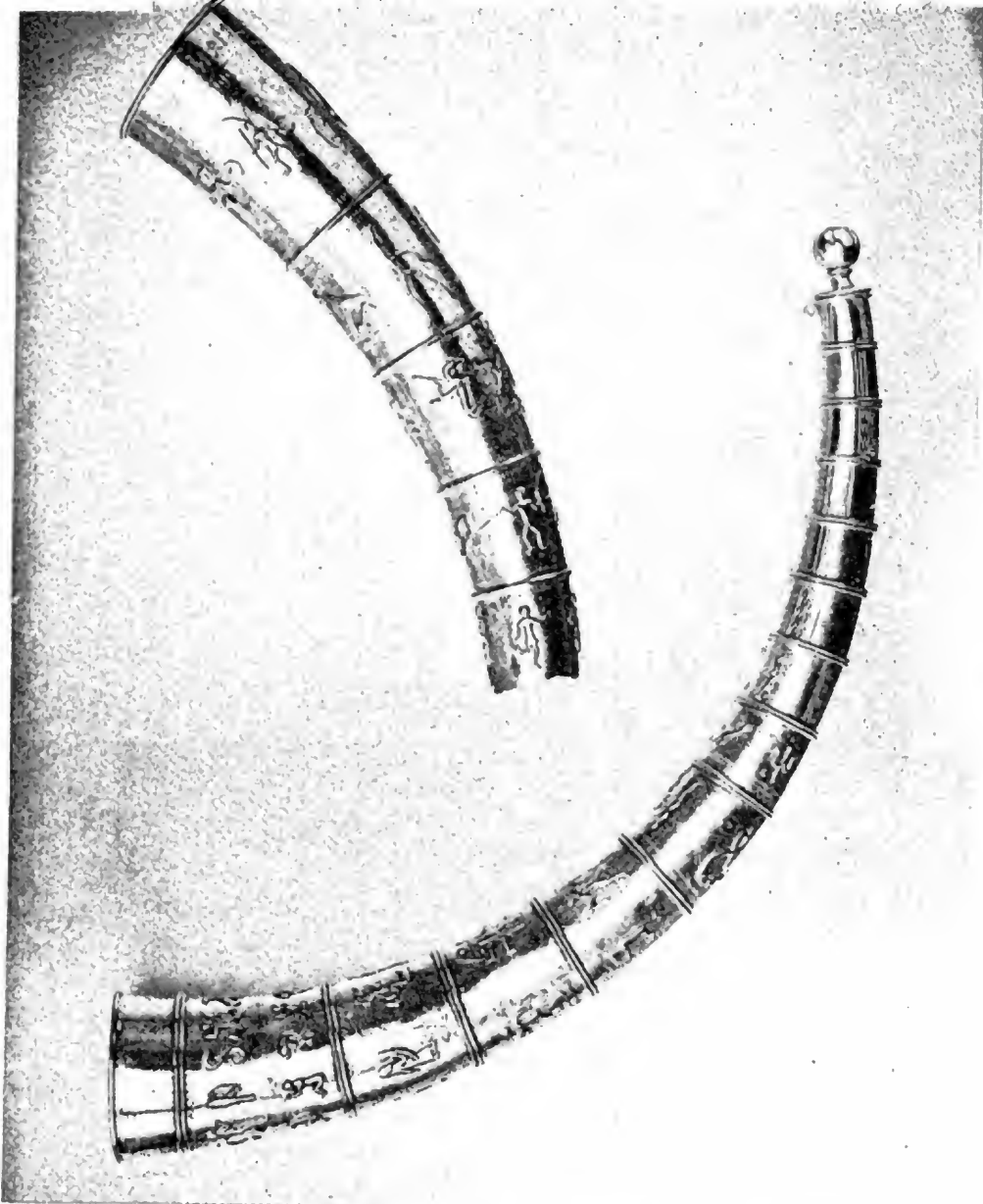
childhood, all our sweet dreams and vast plans, for the ultimate realization of which I now saw such a brilliant chance before me; but how could I think of realizing them without her participation? Then again I bitterly accused myself for not having demanded her in marriage before proceeding to St. Petersburg; but again I recollected that I could not have done so without exposing myself to ridicule, because while in Amsterdam I was only a clerk, and my position was a dependent one, subject to the caprice of my employers; besides I was not sure of succeeding at St. Petersburg, where instead of success I might have made a complete failure. I fancied that neither could she be happy with anyone else beside me, nor that I could possibly ever live with another wife but her. Why then should fate be so cruel as to tear her from me when, after having for sixteen long years striven to reach her, I seemed at last to have succeeded in attaining her? It had indeed happened to Minna and me as it often happens to us in our sleep, when we dream that we are pursuing somebody and can never catch him, because as often as we reach him he escapes us again. I thought I could never get over the misfortune of losing Minna as the partner of my life; but time, which heals all wounds, at last healed mine, so that, although I remained for years mourning for her, I could at least continue my mercantile pursuits without further interruption.

In my very first year at St. Petersburg my operations had already been so successful, that in the beginning of 1847 I was inscribed in the Guild as a wholesale merchant. But, in spite of my new functions, I remained in connexion with Messrs. B. H. Schröder & Co. of Amsterdam, whose agency I kept for nearly eleven years. As I had acquired in Amsterdam a thorough knowledge of indigo, my transactions were almost exclusively limited to that article; and, as long as my fortune was below 200,000 francs (£8,000), I never gave credit except to merchants of the very first standing. Thus I had to content myself at first with very small profits, but my business was a perfectly safe one.

Not having heard of my brother, Louis Schliemann, who in the beginning of 1849 had emigrated to California, I went thither in the spring of 1850, and found that he was dead. Happening, therefore, to be in California when, on 4 July 1850, it was made a State, and all those then resident in the country became by that very fact naturalized Americans, I joyfully



A collection of dragons' teeth, second-rate quality, from a Chinese chemist in Hong Kong



The greatest golden treasure of prehistoric Europe, the golden horns of Gallehus, stolen and melted down in 1802, survive only in these copies



Partially unwrapped mummy of Seti I

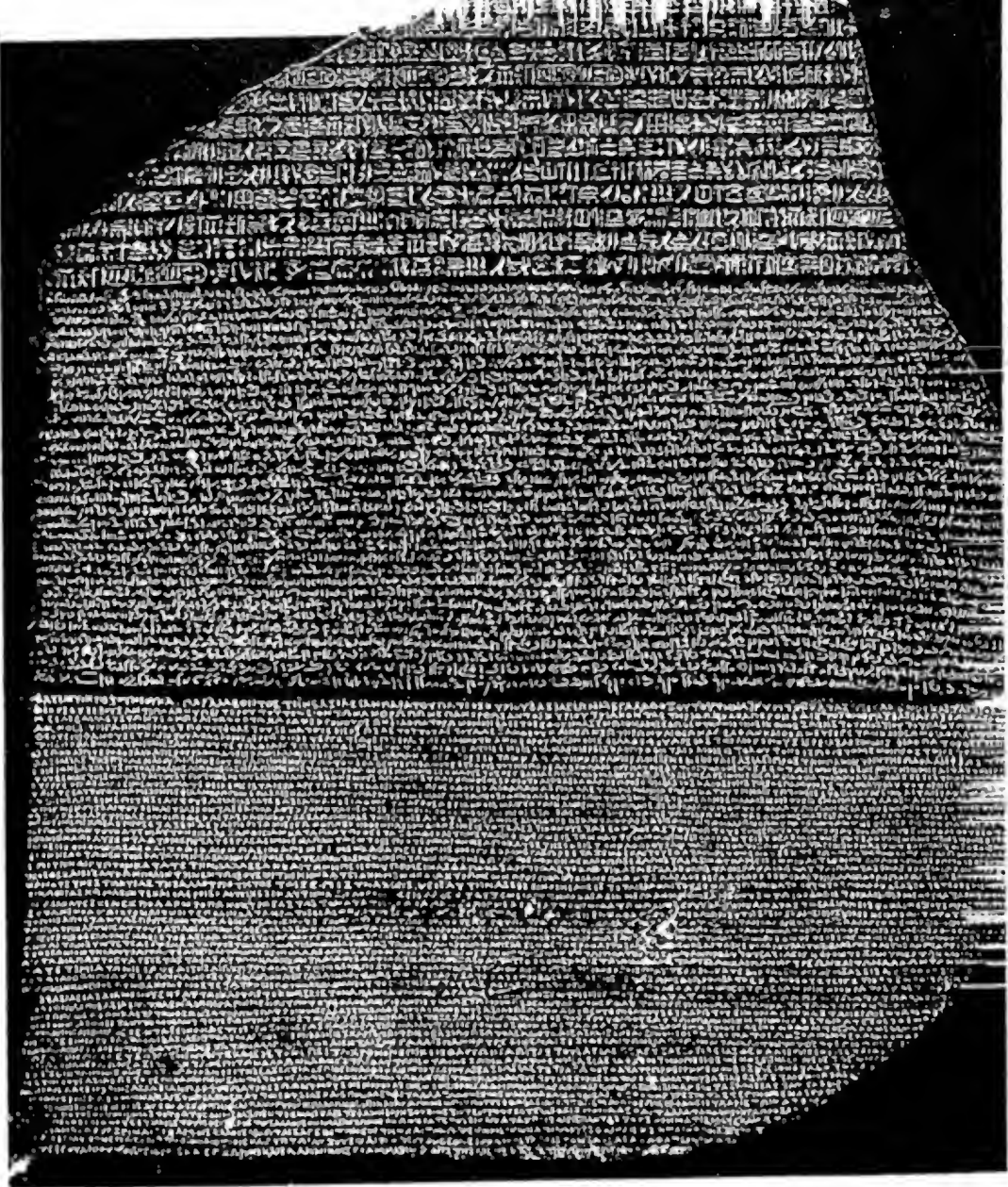


Princess Nsitanebaschru, another of
the royal mummies found by Emil
Brugsch



R.H. Herman del.
 Sig. Belzoni the Patagonian Sampson as he appeared at Sadler's Wells
 Theatre on Easter Monday 1884 wearing Pharaoh's Dress for the purpose of being
 11

Giovanni Battista Belzoni



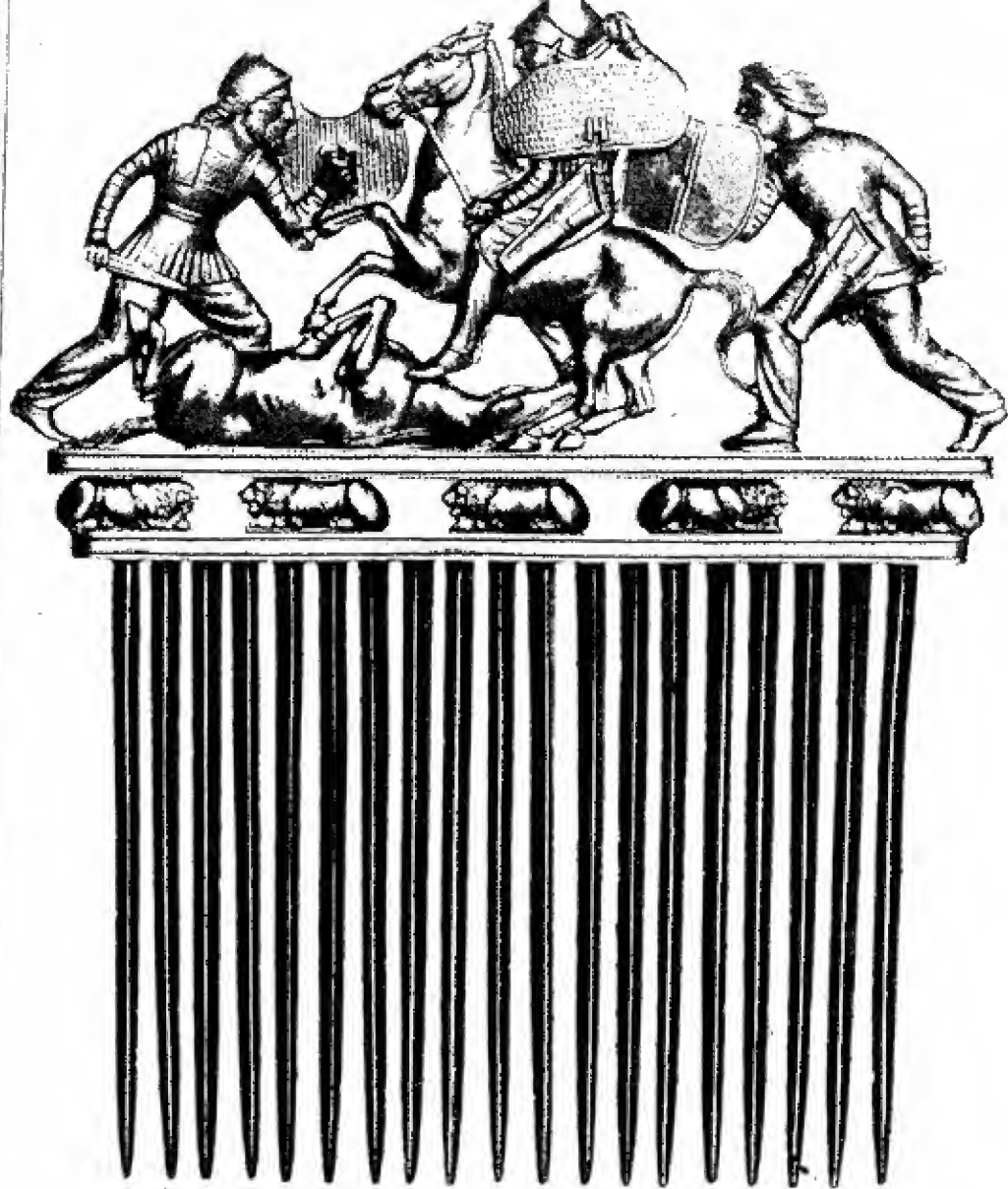
The Rosetta Stone



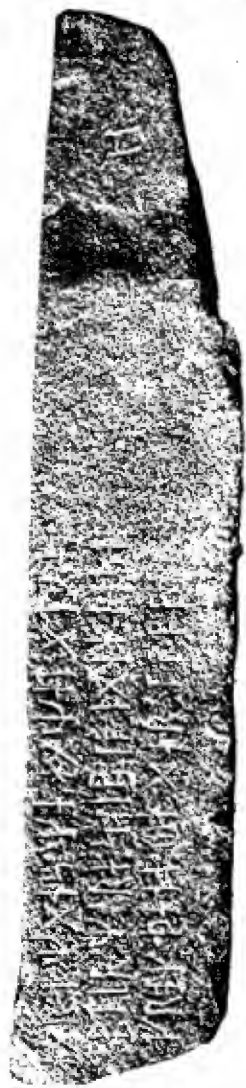
The Parthenon



Easter Island: the stone giants at the foot of the extinct volcano,
Rano Raraku



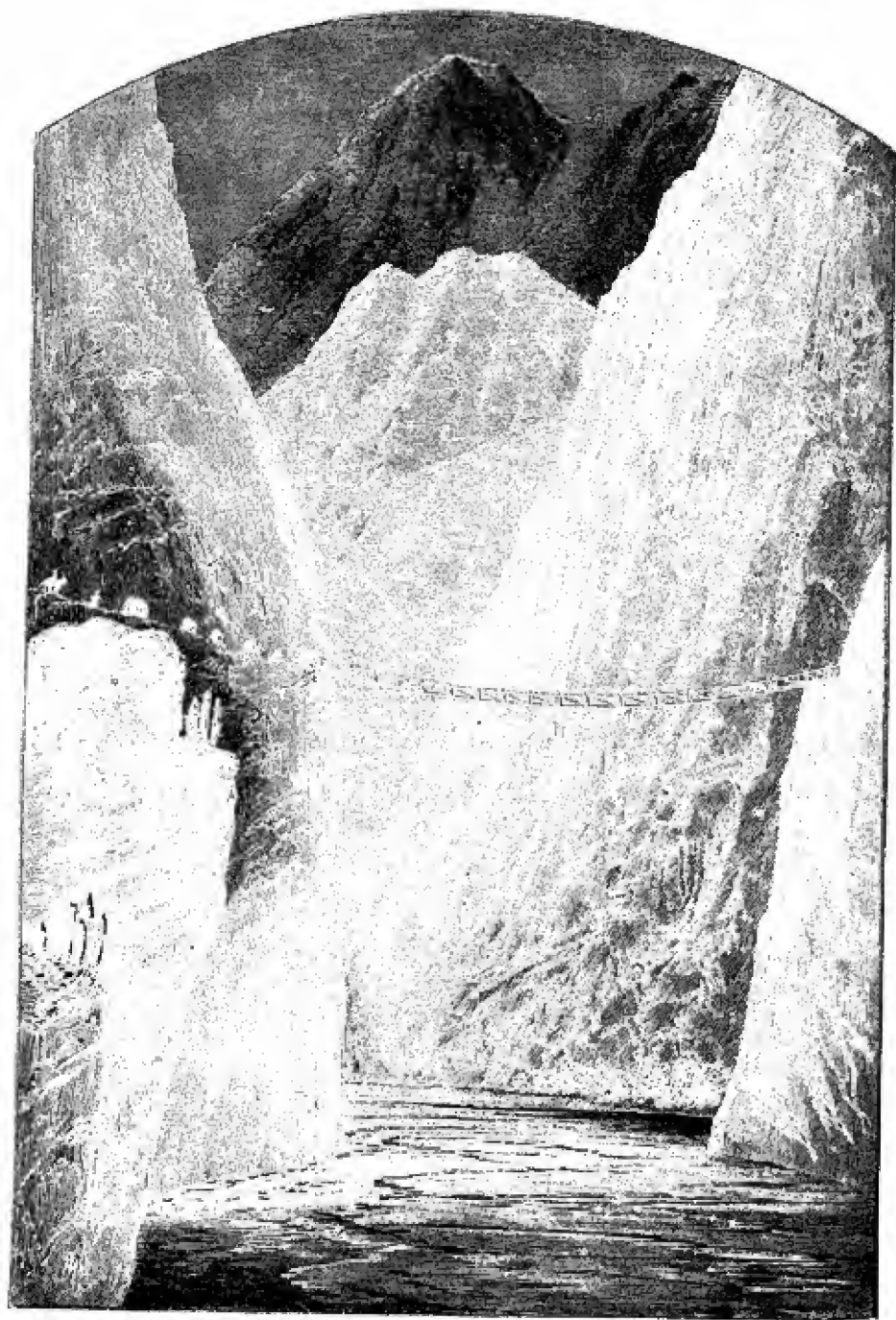
The golden comb of Solokha



The Kensington Stone, front and side view

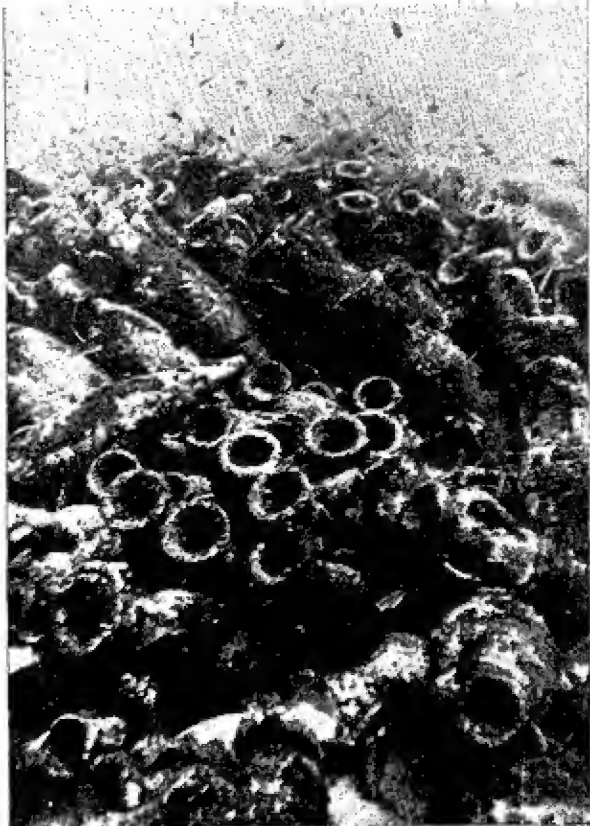


Tula Toltec warriors extracting the heart of a Maya captive

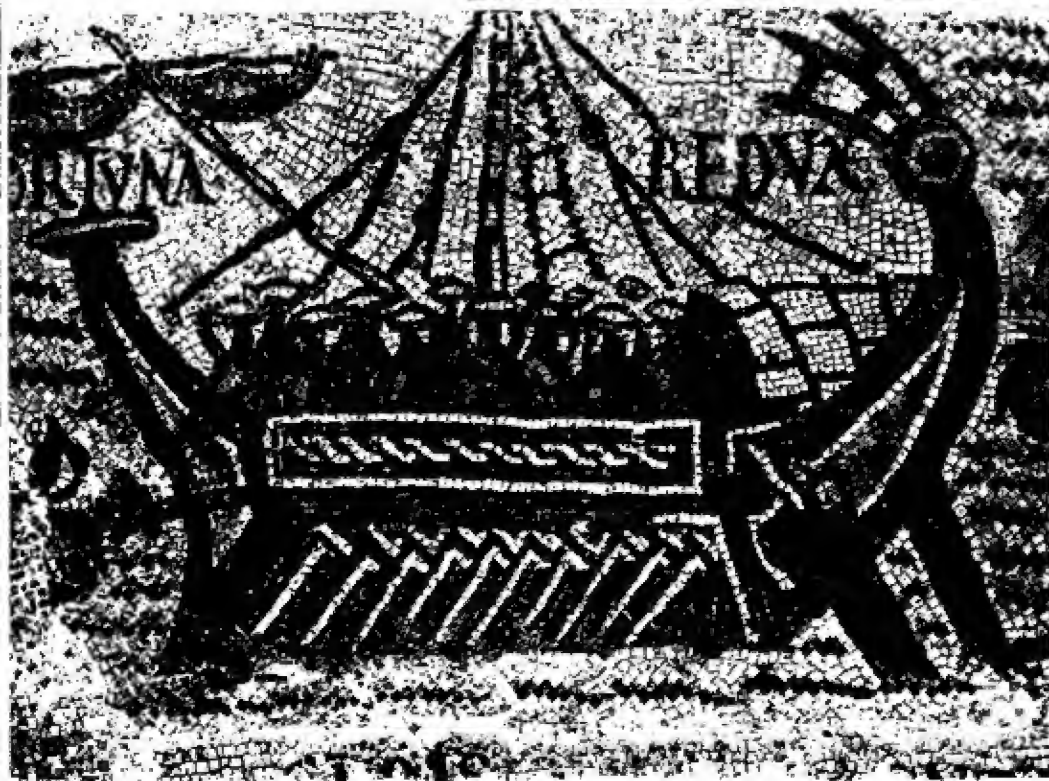


The Bridge of San Luis Rey from Squier's engraving

Cargo of amphoræ from the wreck near the Phare du Titan



Mosaic from Teheesa in North Africa, showing a Roman merchantman with a full deck-load of amphoræ



embraced the opportunity of becoming a citizen of the United States.

At the end of 1852 I established a branch-house at Moscow for wholesale dealing in indigo, first under the direction of my excellent agent, Mr. Alexei Matweieff, and after his death under the direction of his servant Jutchenko, whom I raised to the dignity of a merchant of the Second Guild, considering that an able servant may easily become a good director, whilst a director can never become a good servant.

As I was always overwhelmed with work at St. Petersburg, I could not continue my linguistic studies there, and it was not until the year 1854 that I found it possible to acquire the Swedish and Polish languages.

Divine Providence protected me marvellously, and on more than one occasion I was saved from apparently certain destruction by a mere accident. All my life long I shall remember the morning of 4 October 1854. It was at the time of the Crimean War. The Russian ports being blockaded, all the merchandise intended for St. Petersburg had to be shipped to the Prussian ports of Memel or Königsberg, thence to be forwarded overland. Some hundreds of chests of indigo, as well as large quantities of other goods, had been thus shipped by Messrs. J. Henry Schröder & Co. of London and Messrs. B. H. Schröder & Co. of Amsterdam, on my account, by two steamers to my agents, Messrs. Meyer & Co. of Memel, to be sent on by the latter overland to St. Petersburg. I had just returned from the indigo auctions at Amsterdam in order to see after my goods at Memel, and had arrived late in the evening of October 3rd at the Hôtel de Prusse in Königsberg, when, happening to look out of the window of my bedroom on the following morning, I saw the following ominous inscription, written in large gilt letters on the tower of the gate close by, called 'das Grüne Thor'.

*Vultus fortunæ, variatur imagine lunæ,
Crescit decrescit, constans persistere nescit.*

Though I am not superstitious, the inscription made a profound impression upon me, and I was seized with a kind of panic, as though an unknown disaster were hanging over me. In continuing my journey by the mail-coach, I was horror-stricken to learn, at the first station beyond Tilsit, that the whole city

of Memel had been consumed on the previous day by a fearful conflagration; and I saw this but too well confirmed on my arrival before the city, which resembled an immense graveyard on which blackened walls and chimneys stood out like tombstones, mournful monuments of the fragility of human things. Almost in despair, I ran among the smouldering ruins in search of Mr. Meyer. At last I found him, and asked him whether my goods were safe: by way of answer, he pointed to his smouldering warehouses and said, 'There they are buried.' The blow was tremendous: by eight and a half years' hard labour in St. Petersburg I had only saved 150,000 thalers, or £22,500, and this was now all lost. But no sooner had I acquired the certainty that I was ruined, than I recovered my presence of mind. It gave me great comfort to think that I had no debts to pay, for it was only at the beginning of the Crimean War, and business being then very unsafe, I had bought only for cash. So I thought Messrs. Schröder of London and Amsterdam would give me credit, and I felt confident that I should make up the loss in course of time. In the evening, when on the point of leaving by the mail for St. Petersburg, I was telling my misfortune to the other passengers, when a bystander suddenly asked me my name, and, having heard it, exclaimed: 'Schlie-mann is the only man who has not lost anything! I am Meyer & Co.'s first clerk. Our warehouse being crammed full of goods when the steamers arrived with his merchandise, we were obliged to build close to it a wooden barrack, in which all his property lies perfectly safe.'

The sudden transition from profound grief to great joy is difficult to bear without tears: I was for some minutes speechless; it seemed to me like a dream and incredible that I alone should have escaped unhurt from the universal ruin. But so it was. The strangest thing was that the fire had originated in Meyer & Co.'s stone warehouse, at the northern extremity of the town, whence, owing to a furious gale which was blowing from the north at the time, the flames rapidly spread over the whole city; whereas, under the protection of the same storm, the wooden barrack remained unhurt, though it was not more than a couple of yards north of the warehouse. My goods having thus been preserved, I speedily sold them to great advantage; turned the money over and over again; did a large business in indigo, dye-woods, and war material (saltpetre, brimstone, and lead); and, as capitalists were afraid to do

much business during the Crimean War, I was able to realize large profits, and more than doubled my capital in a single year. I was greatly assisted in my transactions during the Crimean War by the great tact and ability of my agent, my dear friend Mr. Isidor Lichtenstein, senior, partner in the house of Messrs. Marcus Cohn & Son at Königsberg, and his junior partner, Mr. Ludwig Leo, who forwarded all my transit goods to me with a promptitude really wonderful.

My wish to learn Greek had always been great, but before the Crimean War I did not venture upon its study, for I was afraid that this language would exercise too great a fascination over me and estrange me from my commercial business; and during the war I was so overwhelmed with work, that I could not even read the newspapers, far less a book. When, however, in January 1856, the first tidings of peace reached St. Petersburg, I was no longer able to restrain my desire to learn Greek, and at once set vigorously to work, taking first as my teacher Mr. Nicolaos Pappadakes and then Mr. Theokletos Vimpos, both from Athens, where the latter is now archbishop. I again faithfully followed my old method; but in order to acquire quickly the Greek vocabulary, which seemed to me far more difficult even than the Russian, I procured a modern Greek translation of *Paul et Virginie*, and read it through, comparing every word with its equivalent in the French original. When I had finished this task, I knew at least one-half the Greek words the book contained, and after repeating the operation I knew them all, or nearly so, without having lost a single minute by being obliged to use a dictionary. In this manner it did not take me more than six weeks to master the difficulties of modern Greek, and I next applied myself to the ancient language, of which in three months I learned sufficient to understand some of the ancient authors, and especially Homer, whom I read and re-read with the most lively enthusiasm.

I then occupied myself for two years exclusively with the literature of ancient Greece; and during this time I read almost all the classical authors cursorily, and the *Iliad* and *Odyssey* several times. Of the Greek grammar, I learned only the declensions and the verbs, and never lost my precious time in studying its rules; for as I saw that boys, after being troubled and tormented for eight years and more in schools with the tedious rules of grammar, can nevertheless none of them write a letter in ancient Greek without making hundreds of atrocious

blunders, I thought the method pursued by the schoolmasters must be altogether wrong, and that a thorough knowledge of the Greek grammar could only be obtained by practice, that is to say, by the attentive reading of the prose classics, and by committing choice pieces of them to memory. Following this very simple method, I learnt ancient Greek as I would have learnt a living language. I can write in it with the greatest fluency on any subject I am acquainted with, and can never forget it. I am perfectly acquainted with all the grammatical rules without even knowing whether or not they are contained in the grammars; and whenever a man finds errors in my Greek, I can immediately prove that I am right, by merely reciting passages from the classics where the sentences employed by me occur.

Meanwhile my mercantile affairs in St. Petersburg and Moscow went on steadily and favourably. I was very cautious in my business; and although I received severe blows during the fearful commercial crisis of 1857, they did not hurt me much, and even in that disastrous year I made, after all, some profits.

In the summer of 1858 I renewed with my friend, Professor Ludwig von Muralt, in St. Petersburg, my study of the Latin language, which had been interrupted for nearly twenty-five years. Now that I knew both modern and ancient Greek, I found the Latin language easy enough, and soon mastered its difficulties.

I therefore strongly recommend all directors of colleges and schools to introduce the method I have followed; to do away with the abominable English pronunciation of Greek, which has never been in use outside of England; to let children first be taught modern Greek by native Greek professors, and only afterwards begin ancient Greek when they can speak and write the modern language with fluency, which it can hardly take them more than six months to do. The same professors can teach the ancient language, and by following my method they will enable intelligent boys to master all its difficulties in a year, so that they will not only learn it as a living language, but will also understand the ancient classics, and be able to write fluently on any subject they are acquainted with.

This is no idle theory, but a stubborn fact, which therefore ought to be listened to. It is a cruel injustice to inflict for years upon an unhappy pupil a language of which, when he leaves

college, as a general rule he knows hardly more than when he first began to learn it. The causes of this miserable result are, in the first place, the arbitrary and atrocious pronunciation of Greek usual in England; and in the second place the erroneous method employed, according to which the pupils learn to disregard the accents entirely, and to consider them as mere impediments, whereas the accents constitute a most important auxiliary in learning the language. What a happy effect would be produced on general education, and what an enormous stimulus would be given to scientific pursuits, if intelligent youths could obtain in eighteen months a thorough knowledge of modern Greek, and of that most beautiful, most divine, and most sonorous language, which was spoken by Homer and Plato, and could learn the latter as a living tongue, so as never to forget it! And how easily, at how small an expense, could the change be made! Greece abounds with highly educated men, who have a thorough knowledge of the language of their ancestors, who are perfectly acquainted with all the classics, and who would gladly and at moderate salaries accept places in England or America. How greatly the knowledge of modern Greek assists the student in mastering ancient Greek I could not illustrate better than by the fact, that I have seen here in Athens office-clerks who, feeling no inclination for commerce, have left the counting-house, settled down to study, and been able in four months' time to understand Homer, and even Thucydides.

Latin should, in my opinion, be taught not before, but after, Greek.

In the year 1858 I thought I had money enough, and wished to retire from commercial pursuits. I travelled in Sweden, Denmark, Germany, Italy, and Egypt, where I sailed up the Nile as far as the Second Cataracts. I availed myself of this opportunity to learn Arabic, and I afterwards travelled across the desert from Cairo to Jerusalem. I visited Petra, and traversed the whole of Syria; and in this manner had abundant opportunity of acquiring a practical knowledge of Arabic, the deeper study of which I continued afterwards in St. Petersburg. After leaving Syria I visited Smyrna, the Cyclades, and Athens, in the summer of 1859, and I was on the point of starting for the island of Ithaca when I was seized with fever. At the same time I received information from St. Petersburg that a merchant, Mr. Stepan Solovieff, who had failed, owing me a large

sum of money, and with whom I had agreed that he should repay it in the course of four years by annual instalments, not only had not made his first payment, but had brought a suit against me in the Commercial Court. I therefore hurried back to St. Petersburg, was cured of fever by the change of air, and promptly gained my cause. But my antagonist appealed to the Senate, where no lawsuit can be terminated in less than three and a half or four years; and my presence on the spot being necessary, I went into business once more, much against my will, and on a much larger scale than before. My imports from May to October 1860 reached as high a sum as £500,000. Besides indigo and olive oil, I also in 1860 and 1861 embarked largely in cotton, which gave great profits, owing to the Civil War in the United States of America, and the blockade of the Southern ports. But when cotton became too dear, I abandoned it, and in its stead went into tea, the importation of which by sea was permitted from May 1862 and onwards. My first tea order to Messrs. J. Henry Schröder & Co. of London was for thirty chests; and when these were advantageously disposed of, I imported one thousand, and afterwards four thousand and six thousand chests. I also bought of Mr. J. E. Günzburg of St. Petersburg, who was withdrawing from the trade in goods, his whole stock of tea, at a cheap rate, and gained in the first six months £7,000 on my transactions in that commodity. But when in the winter of 1862-1863 the insurrection broke out in Poland, and the Jews, profiting by the disorder then prevailing there, smuggled immense quantities of tea into Russia, I could not stand this competition, being obliged to pay the high import duty. I therefore retired again from the tea trade, but it took me a long time to sell at a small profit the six thousand chests which had remained on my hands. But my staple commodity always remained indigo; for, as I knew the article well, and was always favoured by Messrs. John Henry Schröder & Co. of London with choice and cheap purchases, and as I also imported large quantities direct from Calcutta, and never confided the sale of indigo to clerks or servants, as others did, but always stood myself in my warehouse, and showed and sold it personally and wholesale to the indigo dealers, I had no competition to fear, and my net profit on this article was on an average £10,000 annually, with six per cent interest on the capital employed.

Heaven continued to bless all my mercantile undertakings

in a wonderful manner, so that at the end of 1863 I found myself in possession of a fortune such as my ambition had never ventured to aspire to. But in the midst of the bustle of business I never forgot Troy, or the agreement I had made with my father and Minna in 1830 to excavate it. I loved money indeed, but solely as the means of realizing this great idea of my life. Besides, I had recommenced business much against my will, and merely in order to have some occupation and distraction while the tedious lawsuit with the merchant who had attacked me was going on. When therefore his appeal had been rejected by the Senate, and I had received from him the last payment, in December 1863, I began to liquidate my business. But before devoting myself entirely to archæology, and to the realization of the dream of my life, I wished to see a little more of the world. So I started in April 1864, for Tunis, to investigate the ruins of Cathage, and went thence, by way of Egypt, to India. I visited in succession the island of Ceylon, Madras, Calcutta, Benares, Agra, Lucknow, Delhi, the Himalaya Mountains, Singapore, and the island of Java, and stayed for two months in China, where I visited Hong Kong, Canton, Amoy, Foochoo, Shanghai, Tin-Sin, Peking, and the Great Wall. I then went to Yokohama and Jeddo in Japan, and thence crossed the Pacific Ocean in a small English vessel to San Francisco in California. Our passage lasted fifty days, which I employed in writing my first work, *La Chine et le Japon*. From San Francisco I went, by way of Nicaragua, to the Eastern United States, travelled through most of them, visited Havannah and the city of Mexico, and in the spring of 1866 settled down in Paris to study archæology, henceforth with no other interruption than short trips to America.

In 1868, his dream was realized and he commenced the excavation of Troy.

DENMARK

GEOFFREY BIBBY

THE GOLDEN HORNS

(From THE TESTIMONY OF THE SPADE. Collins, 1957)

The story of the discovery and loss of the golden horns from Gallehus in West Jutland is one of the most exciting incidents in the history of Danish archæology. This account of the story, taken from his book, *The Testimony of the Spade*, is by Geoffrey Bibby, an Englishman now on the staff of the Prehistoric Museum at Aarhus in Jutland.

THIS is a chapter without a moral. Except perhaps that what glitters is sometimes gold, and that finding is not necessarily keeping. And that the early inhabitants of northern Europe—who, after all, had for centuries periodically pillaged the richest empires of Europe and Asia—were not necessarily so lacking in material wealth as the more old-fashioned history books would have us believe.

It is a summer's day in the year of Our Lord 1639 and in the fifty-first year of the reign of Christian IV, King of Denmark and Duke of Schleswig. To be precise, it is Saturday, July 20th by the old style, August 2nd by our reckoning. Three young girls are walking leisurely on the grassy fringe of the dusty earth road that leads from the village of Østerby to the bustling little town of Tønder, the busiest and most prosperous town in eastern Schleswig at the foot of the Jutland peninsula. They know the road well, for they traverse it every Saturday bringing in to their dealer in Tønder the lengths of lace which they have completed during the week. Tønder lace is already famous throughout Denmark and Northern Germany, and most of it is made in the hamlets round about, by girls and women who receive their materials from the Tønder middlemen and deliver to them the finished work.

Just where the track leads off to the tiny hamlet of Gallehus one of the girls, Kirsten Svendsdatter, stumbles over what appears to be the root of a tree. She utters a far from ladylike expression of annoyance, for she remembers that the previous Saturday she had stumbled over the self-same root at the self-

same place. This time she is carrying a stick, and she swings a vengeful blow at the obstruction. To her astonishment, it rings metallically to the stroke.

While her two companions walk on ahead Kirsten stoops down to examine the strange obstacle, clears the earth away from around it with her hands, and finally, by exerting all her strength, pulls the object by main force out of the ground. She finds herself holding a curved metal horn, over two and a half feet long and of inordinate weight.

Her cry brings the two girls running back to her. They excitedly examine the find, and, taking it to a nearby stream, wash the encrusted earth and clay away, exposing the bright gleam of yellow metal, the panels covered with strange embossed and chased figures. They agree that it is brass, a trumpet probably, lost by some strolling musician or the relic of some campaigning army. Her two friends urge Kirsten to throw it away, rather than encumber herself with its weight all the way to Tønder and back. But she wants to show it to her foster-parents—she is an orphan—and carries it in her apron the long day through, until in the evening she reaches her home in Østerby. Her foster-parents agree that the horn, though curious, is worthless. It is composed of seven broad rings that fit over an inner shell, and these rings, separated from one another, soon become the favourite playthings of the children of the family, and in a day or so are spread throughout the village.

Next Saturday, when Kirsten should again walk to Tønder with her lace, her foster-mother suggested that she take one of the rings with her, as a gift for the wife of her dealer. This lady, Marina Thomsen, belonged to the class of rich burghers who formed the aristocracy of the merchant towns of Schleswig. Impressed by the massive metal of the ring, she proposed that Kirsten should bring her the whole horn and promised to have it fashioned into a pair of candle-sticks, one of which Kirsten should have for her trouble. So during that week Kirsten collected together the scattered components of the horn and the following Saturday packed them tightly within one another and carried them in to Marina Thomsen in her lace-bag. Mistress Thomsen was by chance entertaining her brother, a leading burgher of Flensborg, and he, attempting to pull the rings apart from one another, noticed that the metal was strangely soft for brass and, suspecting the truth, took one ring

to a nearby goldsmith. He pronounced the ring to be of virgin gold.

The whole town went wild with excitement as the news spread, and the excitement was even greater at Gallehus, where the great gold horn had been found, and at Österby, when Kirsten returned with the news that for a week the village children had been playing with a king's ransom in gold. In the meantime the problem of disposal of the treasure was exercising the minds of the solid burghers of Tönder. It was finally decided that, as treasure trove, the gold horn belonged to the King. John Thomsen, Marina's husband and a town councillor, thought that it was only right and proper that Kirsten should in person take the horn to the King, and the next day he placed a carriage at her disposal to take her and the horn to Ribe, to the King's Sheriff, who would arrange for both to travel to wherever the King was to be found. But when the country girl reached the cathedral city of Ribe with her incredible treasure she found the Sheriff away, and she was induced to leave the horn with the Sheriff's clerk, who gave her a receipt and sent her home.

King Christian IV was in the meantime travelling in his duchy of Schleswig, and one evening at his banqueting table at Glückstadt he heard rumours of the finding of the golden horn. He sent a trusted man to make inquiries, and finally received the horn from the Sheriff's office. For some time it remained in his possession, exciting much wonder and admiration. Then he presented it to his son, the Crown Prince, who was interested in antiquities. At first Prince Frederick intended to have the relic altered for use as a drinking-horn, but fortunately better counsel prevailed and he contented himself with fashioning a gold plug to stop up the narrow end. For some years it stood in a place of honour among his collection, being frequently used for the drinking of toasts as a mark of respect to visiting celebrities. On the death of the Crown Prince it reverted to the King and was placed in the royal treasury.

The finder of the horn, poor Kirsten, had been quite forgotten. But after some months, urged on by her friends in Tönder, she put together a touching letter of reminder to the King. The records relate that she in due course received a reward for her discovery, though they are silent as to its amount. Tradition has it that she was promised whatever she

would like most in all the world, and that the simple girl, unable to imagine anything of greater magnificence, asked for, and received, a red silk skirt!

The finding of the golden horn became a legend in Gallehus. It was commonly said there that 'there was more wealth under the ground than there was above it'. But life went on, ploughing and harvesting, summer and winter, generation by generation.

Erik Lassen, called Jerck by his fellow villagers, farmed a half-holding to the north of Gallehus and lived in a brick and half-timbered cottage a little way into the village. He had acquired his holding in 1715, at the age of thirty-four, and farmed it frugally and industriously, marrying and becoming the father of a daughter. His life cannot have been vastly different from that of any of the countless other small farmers of his time who made a precarious living on tiny holdings across the length and breadth of Europe—until a certain Wednesday before Easter, 21 April 1734.

Towards sunset of that day the elderly husbandman—he was then fifty-three—went out with his spade over his shoulder to dig clay on the stretch of common land which lay in the triangle formed by the roads that led through the village. Less than half an hour later he burst into the house again, laid a heavy earth-covered object on the table, and cried out to his wife: 'To-day I've earned a brandy.' The object was a second gold horn.

When his daughter had washed the horn clean of the clay that coated it, he told how he had found the horn less than a spade's length underground, and they examined it with breathless excitement. It proved to be bigger than the original horn and, though incomplete—a third of the length, at the narrow end, was missing—it weighed over a pound more than the horn found by Kirsten Svendsdatter ninety-five years before. Like the first horn, it was carved with decoration in high relief, and in addition it had an inscription in runes around the opening at the top. The news spread and within a few minutes everyone in the village had crowded into the cottage to view the treasure. Already the same evening Jerck hurried into Tønder with his discovery, aroused a goldsmith, and received confirmation of his assumption. This horn, like the first, was of pure gold.

The next morning Jerck and the goldsmith went together,

with the horn, to the lord of the manor, Count Schackenburg, to whom, according to the new laws, treasure trove belonged, and delivered the horn into his keeping. The count, after pondering the matter for a few days, made his decision, and wrote a letter to the Marshal of the Royal Court, asking permission to present the horn to the King, 'partly,' he wrote, 'fearing that such a rare and costly Antiquity might in private hands easily be lost, partly in consideration of the fact that this present Horn and that in the Cabinet of Arts had been found only ten Paces from each other, had lain for Centuries upon the same Place and had possibly been employed for one and the same Purpose'.

At the same time the count made a detailed investigation into the missing portion of the horn. On satisfying himself that the break at the end of the horn was not new, and thereby clearing Jerck Lassen of a not unnatural suspicion of having retained a portion of the gold, he set six men to digging around the place where the horn was found. But a whole day's search proved fruitless; the missing portion was never found.

A fortnight later King Christian VI visited Flensburg, and Count Schackenburg there presented the horn in person to his King. His Majesty was pleased to apportion a reward of two hundred Riksdalers (about twenty pounds) to the finder of the horn, a reward that Jerck Lassen found so generous that he wrote a fulsome letter of thanks to the King. He did not, however, live to spend the money, dying in August the same year only three weeks after he received his reward.

The horn was placed beside its predecessor in the royal cabinet of antiquities, on an upper floor of the royal library in Copenhagen, and there the two were on view to anyone who was willing to pay the two-daler entrance charge.

For sixty-eight years the two massive gold horns were on exhibition in the royal cabinet, and excited wonder and admiration in all beholders. They were the greatest single treasure of gold dating from prehistoric times. It is, in fact, only within the last thirty years that the excavators of Tutankhamen's tomb and the 'Royal Graves' at Ur have found treasures to rival the golden horns of Dark Age Denmark. A copy of the longer horn was made in ivory for some Russian nobleman—probably at some date before the second horn was discovered; it turned up, anyway, in the St. Petersburg museum

early in this century. Plaster casts of both horns were made, once for a wealthy German antiquary and once for Cardinal Stephen Borgia in Rome.

Then on the morning of Wednesday, 5 May 1802, the furnaceman whose duty it was to open up the royal cabinet each morning found the door to the room containing the golden horns open, the glass case smashed, and the horns gone. In consternation he sent word to the custodian of the cabinet, who sent a messenger to the police. What follows is a story of inefficiency and procrastination which it is bitter for later generations to think of. The police did not arrive on the scene until the following day! They then made a routine report and took no further action. It was not until a week after the theft was discovered that it first became publicly known—in a short notice in a provincial newspaper published a hundred miles from Copenhagen. Finally, five days later still, the police issued a notice to the Copenhagen press, reporting the theft and offering a reward of a thousand dalers for evidence leading to the recovery of the treasures. Twelve priceless days had by now passed since the discovery of the theft, and the scent was completely cold. Weeks went by, and then months, and the reward lay unclaimed.

It was in April of the following year, only a week short of a year after the theft, that a goldsmith of Copenhagen came to the police to report what he considered suspicious circumstances. Another goldsmith in his neighbourhood, a certain Niels Heidenreich, had been, to the knowledge of the other members of his guild, in financial difficulties a year ago. But during the past year he had apparently laid hands on a considerable quantity of gold, and had been selling objects of gold far in excess of the weight of metal which he could have come by honestly.

At this the police pricked up their ears. It happened that they knew Niels Heidenreich. Son of a church-warden in Jutland, he had drifted to Copenhagen, got deep into debt, and had turned to counterfeiting. For this he had been condemned to death in 1788, but had succeeded in getting his sentence commuted to life imprisonment. After nine years in jail he had been released for good behaviour and had obtained permission to set up as a watchmaker and goldsmith. A raid was at once made on his shop and he was brought in for questioning. No trace of the golden horns was found in his

shop, but in his sister's house lay about five pounds of raw smelted gold.

After three days' cross-examination Heidenreich confessed. He had seen the possibility of the theft, he said, three years before he had carried it out. He had noticed that access could be gained to the royal cabinet through the royal library, which lay in the same building. To the door into the library he had managed to make himself a false key. The remaining six doors through which he had to pass when, on the night of May 4th, he had made his attempt were all opened with the aid of the latch-key to his own house!

He told how he had taken the golden horns to his workshop, where they had lain for some days in the kitchen drawer before he smelted them down. He had gradually in the course of the year disposed of over ten pounds weight of the gold, fashioning much of it into buckles and necklaces, and casting the rest to counterfeit the East Indian gold coins known as *pagodas* which were much in vogue and which, being commonly brought into the country by sailors, were impossible to trace.

Heidenreich was duly sentenced once more to imprisonment for life, and this time he served for thirty-seven years before being released as an old man. He died in poverty in 1844, having spent over half of his eighty-three years in jail.

But the horns were gone. And as a crowning piece of ineptitude, the remaining five pounds of metal and as many of the objects made by Heidenreich as could be recovered were handed to the mint and there smelted together with the national stocks of raw gold. There is not a single piece of gold anywhere in the world to-day which is known for certain to be of the metal of the golden horns of Denmark.

The succession of misfortunes which followed in the train of the horns might well, in a people more prone to superstition than the Danes, have produced a myth of the type that later surrounded Tutankhamen's treasure. The untimely death of the Crown Prince who received the first horn, the sudden death of Jerck Lassen after finding the second, the tragedy of the loss of the horns themselves, and the fate, however well deserved, of the man who destroyed them could well have caused a story of a curse upon the horns to spread abroad. But more was to come.

Once the horns were lost, it became imperative to collect all available information about them, in order that true copies

might be made and at least the likeness preserved for posterity. It was then found that no cast of the horns existed in Denmark, and that the moulds from which the casts sent to Germany and Italy had been made had been destroyed. But the casts existed, it was thought, and they could be copied. But all inquiries in Germany were fruitless. The antiquary for whom the casts had been made was dead, his collection dispersed, and a hundred and fifty years of search in antique-dealers' shops and museum attics through the length and breadth of Europe have not brought the missing casts to light.

The Borgia casts had never reached their destination. The ship in which they sailed for Italy had been wrecked off the coast of Corsica and had sunk with all its cargo.

All that was left of the greatest treasure in Europe were the drawings and measurements and weights included in the descriptions of the gold horns published after their discovery. On the basis of these, two reproductions in gilded silver were made in 1860 at the expense of the archæologist-king, Frederik VII and presented to the National Museum in Copenhagen. And there they are to this day.

But the discussion goes on. No one can be certain that the drawings made in the seventeenth and eighteenth centuries are accurate; it is at least certain that they do not exactly scale with the measurements made at the same time. And almost yearly a new theory is published, giving some new interpretation of the original appearance of the lost horns.

The lesson, of course, has been learned. Anyone who tries to lift the lid of any of the cases containing gold in the Copenhagen Museum rings an alarm in the gatehouse and at the nearest police station. And in Tutankhamen's treasure-house in the Cairo Museum two uniformed bodyguards keep their hands permanently on the butts of their revolvers. But all the precautions in the world can never bring back the lost golden horns of Gallehus.

But what were the horns? And why were they found at Gallehus? On Jerck Lassen's horn, written in the type of runes current in Scandinavia in the fifth century A.D. stands the only thing that we know with certainty: 'I, Lægæst, son of Holte, fashioned this horn.' Apart from this meagre record, Lægæst and his father are unknown. But the style of the runes and of the ornamentation on both horns dates them very surely to

the period A.D. 400-450. It was a period when Europe was in chaos. Following upon the sack of Rome in 411, whole nations were on the move over the length and breadth of Europe. The Visigoths had marched clean across the continent with all their chattels and womenfolk, from the Baltic to Spain and North Africa, while the Vandals and Longobards were dividing the rest of the Western Empire behind them.

Closer to Gallehus, life was equally unsettled. The warlike Danes were pushing westwards from their homeland in Southern Sweden and the Danish islands. Hoards of weapons, the booty of successive battles won by the Angles and the Jutes of the Jutland peninsula against these invaders, have been found at six places in Jutland and the island of Funen, heaped up as thank-offerings to the unknown gods who had given victory to the defenders of their homeland. But the pressure was increasing all the time, and already while the gold horns were being made shrewd eyes were looking across the North Sea to where the fertile province of Britannia had just been left defenceless by the withdrawal of the Roman legions. It is against this background that the gold horns must be seen.

Gold there was for the taking across the broken frontiers of the Roman Empire. And who knows what priceless ornaments, looted from the villas, the churches of Gaul, were melted down to provide the raw material for the barbaric splendour of the horns of Gallehus?

The latest interpretation of the scenes depicted upon the horns would suggest that Lægæst and his fellow goldsmiths knew, at least by hearsay, of the Eastern Roman Empire. The reliefs are now thought to represent scenes from the great new carnival held in the Hippodrome at Constantinople, and it is even believed that the throne of the emperor and the Dragon Column from Delphi—which can still be seen in position in the centre of Istanbul—are here depicted. The intrinsic value of the horns makes it certain that they were royal possessions or else the treasure of a temple of no mean importance. And if the carnival interpretation is accepted, it seems probable that they were borne forth at the inauguration of the spring and harvest festivals which are known to have played an important part in the religious life of Dark Age Scandinavia, and which would be the festivals corresponding most closely to the carnivals of the Eastern Roman Empire. There is even a picture on the larger horn of a man carrying such a horn.

So much for the making and use of the horns. How long a period elapsed before they came to rest beneath the turf at Gallehus is unknown. There is not the slightest reason to believe that Gallehus was the site of the palace or temple in which the horns were used. Repeated investigations have found no single trace of any prehistoric town or building in the vicinity. It would appear that the priceless treasures were buried in a shallow excavation out in the open country. But no adequate reason has yet been suggested. Were they rescued—or looted—from the sack of some Jutish capital by the Danish invaders and buried until they could be recovered later? Or did some prince lay them down as a votive offering to the gods of his native soil before he sailed with Hengist to seek his fortune in the new land across the North Sea?

No one knows the answer. The golden horns of Denmark form one of the most tantalizing puzzles of antiquity. They appeared, posed their riddle, and disappeared again, taking with them the only evidence on which a solution could be based.

SOUTH RUSSIA

COUNT ALEXIS BOBRINSKOY

THE GRAVE OF A SCYTHIAN KING

(From 'THE GOLDEN COMB OF SOLOKHA', LONDON CALLING, 7 May 1953)

Between the seventh and second centuries B.C. Scythian and kindred nomads roved the natural grasslands of Asia and Europe. Theirs was a turbulent and free existence, forever on horse-back, hunting, fighting and guarding their animals, but despite the apparent wildness of their lives, they were artists and loved to live well. From their great burial mounds we learn so much about them. Since they were nomadic and possessed no temples or shrines, their burial grounds were revered beyond all else and here the ceremonies for the dead were elaborate and costly. In Southern Russia, to the north of the Black Sea, the rich and wonderful tombs of the Royal Scyths are located.

Here a sloping shaft leads to a sunken tomb chamber that has been reinforced with wooden piles and roofed; and within, no doubt with fine hangings furnishing the walls, the dead man has been laid to rest with sumptuous equipment and golden ornaments. In lateral rooms his servants and his wife lie near him, and all around, his horses and their equipment have been placed. And then the tomb was sealed and an artificial mound thrown up above. Some of the mounds stand as much as thirty feet high and are a thousand feet in diameter. Many of these graves were robbed in antiquity but occasionally one is found that gives us a glimpse of the wealth of those proud, magnificent nomads.

Although not quite as elaborate as some, the grave at Solokha has given the world incomparable treasures, and the Golden Comb found there demonstrates most beautifully the instinctive delight of the Scythian people in the use of animal forms for decoration.

The following article is written by the finder of the Golden Comb of Solokha.

THE heat was intense on that afternoon in July when my father and I left the railway carriage and stepped out on to the platform of a small railway station some twelve miles north of Nicopol, a small town in South Russia. The

temperature rose to about 110 degrees Fahrenheit and all life was at a standstill. A small cart drawn by two horses was expecting us at the exit. Father and I took our kit-bags and got into the cart. The sleepy horses started off in a lazy but regular trot on a journey of some thirty miles over perfectly flat, sun-baked ground.

My father had had a telegram which made him jump to his feet and order an immediate departure from our comfortable, quiet home hundreds of miles away. 'Have terminated preliminary excavations very important sepulchral mound stop expecting your immediate arrival before digging king's tomb. Professor Wesselovsky.'

My father, as President of the Imperial Archæological Commission, assisted by a staff of some sixteen learned archæologists and historians, was for many years directing the research work in the field of Russian archæology. One of his colleagues was Professor Wesselovsky, the eminent Orientalist, author of many learned books, who was now supervising the excavation of a barrow built over the remains of some unknown Scythian chieftain in the vast plains of South Russia, in the fifth or fourth century before our era.

Since the barrow was in the heart of the mysterious country of the Scythians described by Herodotus himself, Professor Wesselovsky's telegram roused my father's curiosity. He dared not hope that this particular tomb was untouched by the hands of robbers. Could such luck now reward the toils of the scientists?

At last, towards sunset, our usually silent coachman said: 'I can see Solokha, the barrow, on the horizon,' and pointed it out to us with his whip. Indeed, we also were able to see the small hill in the distance: our monotonous journey was coming to an end. We did not cross a single village; on a stretch of thirty miles we did not see a single house. As we were getting nearer and nearer to the site of the excavations we could get a glimpse of the workmen busy with their wheelbarrows filled with earth, and at last Professor Wesselovsky met us with an outstretched hand and a broad smile: 'I am so glad you were able to come,' he said. 'To-morrow morning we will start digging the king's tomb.'

Suddenly, in the middle of the night, we were startled by terrific thunder and lightning. Rain started falling in torrents. In a few minutes our tent was soaked through. We felt helpless

and miserable. Our scanty belongings were swimming in mud. My father said, philosophically: 'Well, my friends, no wonder! The king protests against our intrusion. He does not want us to molest his last abode.' Gradually the storm calmed down, and the rain stopped, but we had spent a sleepless night, full of terrible discomforts.

Dawn came and the sun rose in a pink, cloudless sky. We had our early-morning cup of tea and felt a little better. 'Indeed,' said Professor Wesselovsky, with his usual kind smile, 'only a very powerful king can send such thunder out of the blue. But this heavy fall of rain will soften the ground and it will be easier for us to dig. In my opinion the spirit of the king intends to help us find all his treasures. Shall we start?'

'Yes, of course, let us start,' said my father, 'with the help of God let us start; but remember that people for some reason call this barrow Solokha, and Solokha means a witch . . . !'

We went to the open barrow. First we had to clear the passage to the actual grave and carefully investigate all its approaches. This operation, before we actually started digging the chieftain's grave, took us quite two hours of time to complete. Then came the real thing. We spread newspapers on the ground so as to place on them all the objects which were now to be unearched from the grave itself. Gently, very gently, my father and Professor Wesselovsky started scraping the surface of the grave with their sharp trowels, and throwing the earth into a sieve.

Many minutes passed: the expectation was tense. I stood respectfully aside, just in case my help would suddenly be wanted. Familiar thuds and knocks were heard now and again, as the archæologists came across various little metal objects with their trowels. These were the sharp, bronze arrow-heads, but the wooden shafts of the arrows had decayed into dust centuries ago. Next came earthenware cups and small vases made for the Scythian king by his Greek prisoners.

At last we came to the skeleton of the king himself, and had to proceed with utmost care not to damage or break the golden ornaments with which he had been adorned on his death-bed. There he lay, in all his magnificence, untouched by robbers or any other hand for twenty-four centuries. We removed the earth, little by little, taking away the pieces of what was left of the wooden structure of his burial chamber. The king—now there was no longer any possible doubt that

this was a king—was literally covered with golden plaques, sewn into his silk cloak.

As we removed the earth, inch by inch, we could see the traces of the silk fabric, the threads of most vivid colours—red, crimson, emerald green, and lilac. But no sooner were these frail tissues exposed to the action of the air than they immediately faded away and left only colourless dust in our hands. Only the golden ornaments, which had once adorned this bright cloak, survived in all their beauty.

We found over three hundred such golden plaques, each about a square inch in size. Near the king's skeleton lay two swords, one of which had a gold-plated sheath, handle, and guard; then we discovered a quiver plated with silver gilt, a bronze helmet, a bronze corslet of scales, which the king wore under his silk cloak; then came several bronze scimitars and other weapons.

Round the king's neck was a large, heavy, massive, twisted necklace of solid gold, ten inches in diameter—a masterpiece of Greek jewellery of the best period. At the ends of this necklace were two heads of lions facing each other and holding a Gordian knot in their mouths. Another golden necklace, a chain of golden tubes with golden pendants, five bracelets of solid gold were put across his wrists, and near by was a golden round dish ornamented with scenes of fighting lions, at least forty of them, executed by Greek prisoners, in high relief. At the king's side were buried seven circular silver bowls ornamented with scenes of galloping horsemen spearing lions pursued by mastiffs, and other hunting scenes so dear to the heart of the Scythians. At the king's feet were three large copper cauldrons and more vases for wine and oil. The sight of so many wonderful treasures coming one after another out of the king's grave made us giddy with surprise and excitement.

As time went on and the king's tomb was at last completely emptied of all its treasures, my father and Professor Wesselovsky could at last straighten their backs and take a short rest from their strenuous work. It was getting late, and we all felt very hungry. Professor Wesselovsky took my father by the arm, and they left the site of the excavations and proceeded towards our camp, where a meal was ready for us. As regards myself, I was still so excited by the wonderful treasures which were unearthed that I simply could not tear myself away from the king's grave. There I sat bewildered, as in a spell, as if attached

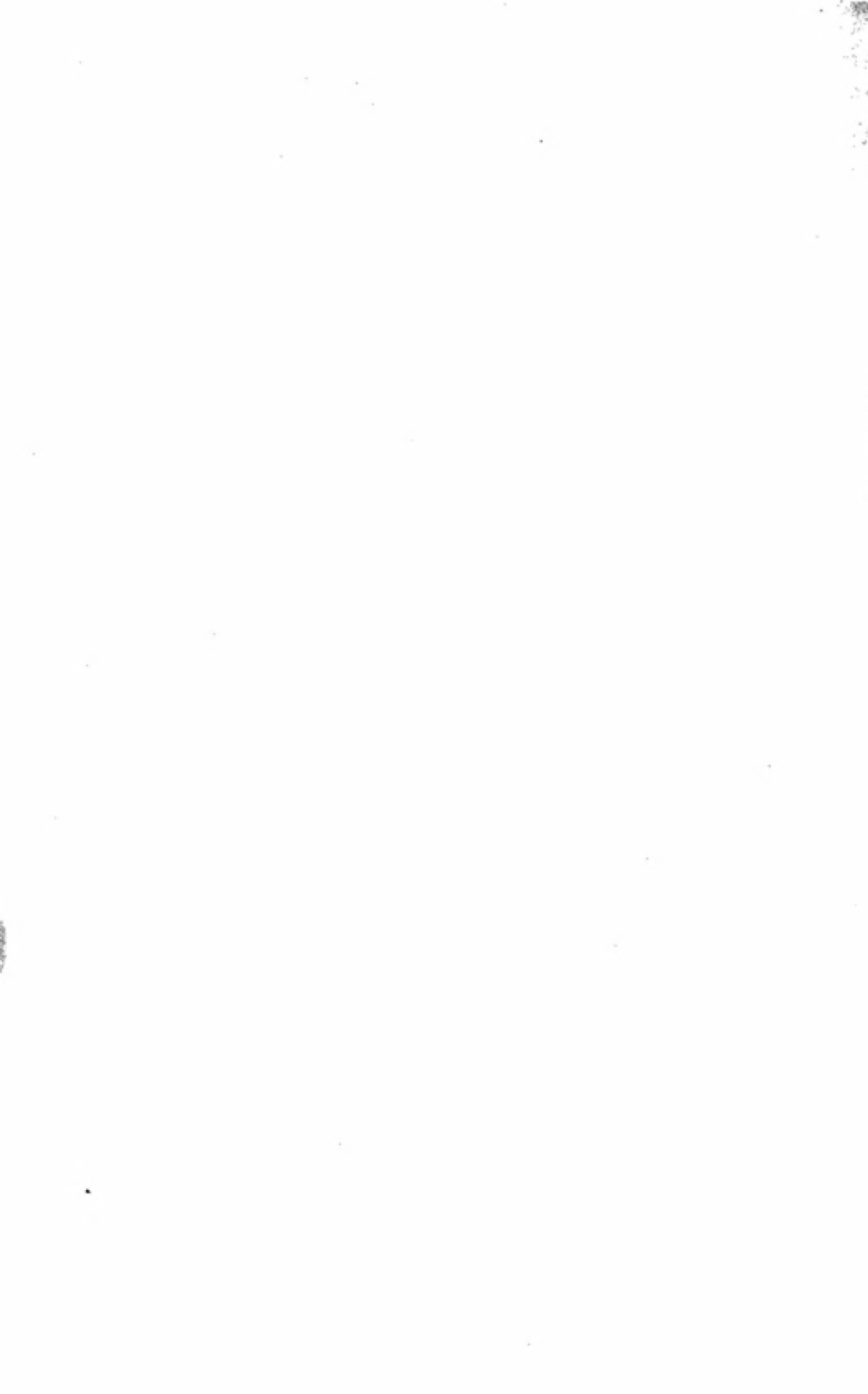
by some hidden magnet to this freshly dug grave now entirely empty of its precious contents. With my little sharp trowel I went on scraping and digging at the hard, black earth without any precise reason, as if attracted by the ground which would not let me leave it.

Suddenly, my little trowel struck something solid. Was it a stone? Or a piece of particularly hard earth? I gave another jab with the trowel, and saw something glitter in the hard ground. I plunged my trowel deeper and brought to light a large, solid, square, heavy, golden object with long spikes sticking down from an ornamented carved upper part. It was a golden comb.

I shouted at the top of my voice: 'Father, come back quickly, I have found a comb, a comb, quick, come back, look at it . . .' and I took the comb into my hands. The distance between my father and myself was quite a hundred yards, and he shouted back: 'Don't touch it, you will break it, for God's sake don't touch it, leave it!'

'I can't break it,' I retorted, 'it is heavy, it is of solid gold. . . .' In another moment he was kneeling by my side, speechless with bewilderment. Indeed, it was a golden comb, the only golden comb of that size and artistic quality in existence, the magnificent, the now world-famous golden comb of Solokha. After 2,300 years I was the first human being to touch it. Perhaps the ghost of the king of the Scythians, wishing to play a prank on the two learned men, chose me, an ignorant boy, as a medium for the great discovery; or was it the mysterious witch, the legendary Solokha, who mischievously put such a treasure into my hands?

MESOPOTAMIA



GEORGE SMITH

THE STORY OF NOAH'S ARK

(FROM ASSYRIAN DISCOVERIES. *Sampson Low, Marston Low & Searle*, 1875)

In 1872 George Smith of the British Museum translated a series of tablets which had been found at Nineveh in the ruins of the Royal Library of Ashur-bani-pal (666-626 B.C.) They had been left in confusion when the great city was destroyed in 612 B.C. The tablets were Assyrian copies of Babylonian legends handed down from the time of the early Babylonian monarchy about 1800 B.C. and after. Certain of the tablets referred to the story of the Flood, but unfortunately an important part of one of them was missing, and Smith felt certain that if he could get to Nineveh and search in the ruins he would be able to find the missing portion. The Daily Telegraph gave him £1,000 for the endeavour and off he set to Nineveh. After only five days' digging his labours were rewarded and he was able to return to England with the additional fragment of the account of the Deluge.

Here, then, is the Chaldean account of the Flood which differs very little from the Hebrew. Later scholars have filled in many of the gaps in the translation; they have identified Izdubar as Gilgamesh, Heabani as Enkidu and so on, and the legends have even been translated into poetry and are now known as the Legends or Epic of Gilgamesh.

The following extracts are from George Smith's original translation.

THESE legends, which I discovered in 1872, formed the subject of my lecture before the Society of Biblical Archaeology on 3 December 1872, and attracted very great attention. On that occasion I principally translated the eleventh tablet in the series, which contains the Chaldean account of the deluge. About one-third of this tablet was then either mutilated or absent, and all the other tablets were in still worse condition. In my excavations at Kouyunjik I have recovered many new portions of these inscriptions, which number in all twelve tablets, and I now for the first time give an account of all the fragments.

There is still much required before the series will be complete, and I have as yet only identified six tablets out of the twelve, these are the fifth, sixth, ninth, tenth, eleventh, and twelfth; I have found, however, a great number of fragments of the others which will serve to fill up and illustrate the legends. Independently of the fact that these tablets give the Chaldean account of the flood, they form one of the most remarkable series of inscriptions yet discovered. These tablets record primarily the adventures of an hero whose name I have provisionally called Izdubar. Izdubar is, however, nothing more than a makeshift name, and I am of opinion that this hero is the same as the Nimrod of the Bible.

The 'Izdubar Legends' appear to me to have been composed during the early Babylonian empire, more than 2,000 years B.C. In primitive times, Babylonia was divided into several small states, and the rest of Western Asia was in a similar or worse condition.

So far as the fragments of the 'Izdubar Legends' are preserved, they lead to the conclusion that Izdubar or Nimrod, a great hunter or giant, obtained the dominion of the district round Babylon, and afterwards drove out some tyrant who ruled over Erech, adding this region to his kingdom. Later, he sent and destroyed a monster which preyed on the surrounding lands; and a seer or astrologer named Heabani came to his court at Erech, becoming his close friend. Together Izdubar and Heabani destroy other wild animals, and conquer a chief named Humbaba, who ruled in a mountainous region full of pine-trees. Another chief named Belesu was next subdued, and then an animal called 'the divine bull' was killed. Izdubar was now in the height of his power, and ruled over all the valley of the Euphrates and Tigris, from the Persian Gulf to the Armenian Mountains. Misfortunes now set in—first Heabani was killed by a wild animal called a 'tamabukku', the nature of which I have not ascertained; next Izdubar was struck with a disease, apparently, from the description, a kind of leprosy. Izdubar went on a wandering excursion to the sea-coast to be cured of his malady, and is supposed there to have met the deified hero who escaped the flood.

In the new fragments I found at Kouyunjik, I discovered that this hero bore the name of *Hasisadra*, which is the origin of the Greek form of his name, Xisithrus. Hasisadra is supposed to have told Izdubar how to obtain his cure, and then

the king returned to Erech, and again mourned over his friend Heabani. The legends close with a petition to the gods for Heabani, who, after his death, is in the lower region of the departed, or Hell. Hea, one of the gods, listens to this prayer, and releases Heabani, who then rises to heaven.

During the early Babylonian monarchy, from 2000 to 1500 B.C., there are constant allusions to these legends. The destruction of the lion, the divine bull, and other monsters, by Izdubar, are often depicted on the cylinders and engraved gems, and Izdubar in his boat is also on some specimens. The legend of the flood is alluded to in the inscriptions of the same epoch, and the 'city of the ark' is mentioned in a geographical list, which is one of the oldest cuneiform inscriptions we possess.

Izdubar appears to have been unsatisfied with the answer of Hasisadra, dealing as it did with the general question of life and death, and he desired to know how Hasisadra became immortal, he probably desiring a similar honour for himself. This introduces us to the eleventh tablet of the series, the most perfect and by far the most important of these legends, the tablet, of which I give a complete translation. . . .

Hasisadra says to Izdubar:

and the god . . . lord of Hades;
 their will he revealed in the midst . . . and
 I his will was hearing and he spake to me:
 'Surippakite son of Ubaratutu
 . . . make a ship after this . . .
 . . . I destroy[?] the sinner and life . . .
 . . . cause to go in[?] the seed of life
 all of it to the midst of the ship.
 The ship which thou shalt make,
 six hundred [?] cubits shall be the measure of its length,
 and
 sixty [?] cubits the amount of its breadth and its
 height.
 . . . into the deep launch it.'
 I perceived and said to Hea my lord:
 'The ship-making which thou commandest me,
 when I shall have made,
 young and old will deride me.'

Hea opened his mouth and spake and said to me his servant:

' . . . the flood which I will send to you,
into it enter and the door of the ship turn.
Into the midst of it thy grain, thy furniture,
and thy goods,
thy wealth, thy woman servants, thy female
slaves, and the young men,
the beasts of the field, the animals of the field
all, I will gather and
I will send to thee, and they shall be enclosed
in thy door.'

I placed its roof, it . . . I enclosed it.
I rode in it on the sixth time; I examined its
exterior on the seventh time;
its interior I examined on the eighth time.
Planks against the waters within it I placed.
I saw rents and the wanting parts I added.
Three measures of bitumen I poured over the
outside.

Three measures of bitumen I poured over the inside.
Three . . . men carrying its baskets, they
constructed boxes.
I placed in the boxes the offering they sacrificed.
Two measures of boxes I had distributed to the
boatmen.

All I possessed the strength of it, all I possessed
the strength of it silver,
all I possessed the strength of it gold.
All I possessed the strength of it the seed of
life, the whole
I caused to go up into the ship; all my male
servants and my female servants,
the beast of the field, the animal of the field,
the sons of the people all of them, I caused to go up.
A flood Shamas made and
he spake saying in the night: 'I will cause it
to rain heavily,
enter to the midst of the ship and shut thy
door.'

He spake saying in the night: 'I will cause it
to rain [or it will rain] from heaven heavily.'
In the day I celebrated his festival
the day of his appointment [?] fear I had.
I entered to the midst of the ship and shut my
door.

To close the ship to Buzur-sadirabi the boatman
the palace I gave with its goods.

The raging of a storm in the morning
arose, from the horizon of heaven extending
and wide.

Vul in the midst of it thundered, and
Nebo and Saru went in front,
the throne bearers went over mountains and
plains,

the destroyer Nergal overturned,
Ninip went in front and cast down,
the spirits carried destruction,
in their glory they swept the earth;
of Vul the flood reached to heaven.
The bright earth to a waste was turned,

the surface of the earth like . . . it swept,
it destroyed all life from the face of the earth . . .
the strong deluge over the people, reached to
heaven.

Brother saw not his brother, it did not spare the
people. In heaven
the gods feared the tempest and
sought refuge; they ascended to the heaven of
Anu.

The gods like dogs fixed in droves prostrate.
Spake Ishtar like a child,
uttered the great goddess her speech:
'All to corruption are turned and
then I in the presence of the gods prophesied
evil.

As I prophesied in the presence of the gods evil,
to evil were devoted all my people and I prophesied
thus: 'I have begotten my people and
like the young of the fishes they fill the sea.'

The gods concerning the spirits were weeping
with her,
the gods in seats seated in lamentation,
covered were their lips for the coming evil.
Six days and nights
passed, the wind, deluge, and storm, overwhelmed.
On the seventh day in its course was calmed
the storm, and all the deluge
which had destroyed like an earthquake,
quieted. The sea he caused to dry, and the
wind and deluge ended.

I perceived the sea making a tossing;
and the whole of mankind turned to corruption,
like reeds the corpses floated.

I opened the window, and the light broke over
my face,

it passed. I sat down and wept,
over my face flowed my tears.

I perceived the shore at the boundary of the sea,
for twelve measures the land rose.

To the country of Nizir went the ship;
the mountain of Nizir stopped the ship, and to
pass over it it was not able.

The first day, and the second day, the
mountain of Nizir the same.

The third day, and the fourth day, the
mountain of Nizir the same.

The fifth, and sixth, the mountain of Nizir the
same.

On the seventh day in the course of it

I sent forth a dove and it left. The dove went
and turned, and

a resting-place it did not find, and it returned.

I sent forth a swallow and it left. The swallow
went and turned, and

a resting-place it did not find, and it returned.

I sent forth a raven and it left.

The raven went, and the corpses on the water
it saw, and

it did eat, it swam, and wandered away, and did
not return.

I sent the animals forth to the four winds, I
poured out a libation,
I built an altar on the peak of the mountain,
by seven herbs I cut,
at the bottom of them I placed reeds, pines, and
simgar.

The gods collected at its burning, the gods
collected at its good burning;
The gods like flies over the sacrifice gathered.

UNITED STATES OF AMERICA



HJALMAR R. HOLAND

THE KENSINGTON STONE: A MYSTERY

(FROM WESTWARD FROM VINLAND. Duell, Sloan & Pearce, New York, 1940)

Is the Kensington Stone genuine, or is it a fraud? It is a stone slab bearing an inscription carved in letters that are clearly related to Scandinavian runic alphabets of an early era, and the date 1362. It was found in 1898 in what is now the heart of the United States of America in Western Minnesota. If authentic, then what a monument indeed it is to those intrepid Norse explorers who penetrated the vast continent a hundred years and more before Columbus. If a fraud, then who carved the inscription and jettisoned the stone?

For sixty years it has been a mystery—and in all that time those in favour of its authenticity have waged a tireless battle in its defence. These valiants would appear to have succeeded when in 1949 the Stone was unveiled at St. Paul in honour of Minnesota Day during the celebrations of the Minnesota Centenary, and again in 1951 when a mammoth reproduction of granite weighing eighteen tons was erected on a four-ton base in Runestone Memorial Park near the site of discovery. But all along the line there were those who doubted—'No scholar of eminence in the field of Scandinavian philology had called the Kensington inscription genuine.'

What was the world to think? Dr. Hjalmar Holand, whose extract is quoted below, believes in the authenticity of the Stone. To him, the fact that the slab was found encircled by the roots of a tree whose age predated the entry of white immigrants into that part of America is conclusive, but Professor Wahlgren points out that 'if a telephone book for the year 1957 were to be found under the roots of a five hundred year old tree one would indeed admire the skill with which it had been placed there, but one should not find it necessary to accept the antiquity of the volume in question'.

I have chosen the extract from Dr. Hjalmar Holand's book *Westward from Vinland* because in it he relates the story of the Stone with gusto: he is its champion and for many years his writings have defended and blazoned the

farne of the Stone abroad. But now, alas, it seems that our dream of pre-Columban white explorers penetrating the interior of North America must cease, and to those who would firmly shut their eyes to that vision I must recommend Professor Erik Wahlgren's recent work, *The Kensington Stone: a Mystery Solved* (University of Wisconsin Press, 1958).

IN the summer of 1898 a farmer in western Minnesota named Olof Ohman made a strange discovery. He was engaged in grubbing stumps in a rough and timbered section of his farm, near the village of Kensington in Douglas County. In the course of this work he encountered one tree which gave him considerable trouble. Upon digging away the soil around the roots he found that a large flat stone lay immediately under the tree. This stone was firmly clasped in the grip of two of its largest roots. He therefore had much trouble in cutting these roots without damaging his axe against the stone.

A little later his attention was again called to the vexatious stone. His ten year old son, playing about and finding the stone smooth of surface, had dusted it partly clean with his cap. When this was done he found a large number of regular marks or scratches upon the surface, and he called his father's attention to them. The father could make nothing out of these marks, but assumed that they were made by some human agent. The news of this discovery was soon noised about and many persons came to inspect the stone. Someone suggested that probably these marks were made by white or Indian robbers who had buried a treasure there. Upon hearing this suggestion a number of persons proceeded to dig in the hillside with shovels and pick-axes, hoping to gain speedy riches, but nothing was found.

This discovery was much more than a nine days' wonder, and as the stone was on exhibition in one of the bank windows of Kensington it was inspected by thousands. The discussion concerning it finally resulted in the conclusion that the stone contained a runic inscription, several persons recalling that they had seen illustrations of similar inscriptions in Scandinavian books.

Late in the fall of 1898 a careful copy of the inscription was sent to O. J. Breda, professor of Scandinavian languages in the

University of Minnesota. He studied the inscription for a couple of months and made a translation of most of it, which reads as follows, the words not understood being indicated by dashes:

— Swedes and — Norwegians on a discovery-journey from Vinland west — we had camp — — — one day's journey north from this stone. We — — fished one day. When we came home found — men red with blood and dead. A.V.M. save from — have — men by the ocean to look after our ships — day's journey from this island. Year — .

This reading was given to the newspapers, accompanied by a lengthy interview in which Professor Breda stated that he did not believe the inscription was genuine for a number of reasons. The chief of these were: (1) The mixture of Swedes and Norwegians which, he said, was 'contrary to all accounts of the Vinland voyages', and (2) the language of the inscription was not Old Norse but a mixture of Swedish, Norwegian and English, which was unthinkable in an inscription dealing with the Vinland voyages of the eleventh century. As is seen above, Breda was unable to read the numerals in the inscription telling when this expedition is said to have been made. He therefore assumed that the inscription purported to add some details to the Vinland voyages which took place in the eleventh century.

These objections of Professor Breda, who was the first to give some interpretation of these strange signs, had a far-reaching influence. They were repeated by others who gained their opinions on the subject from the newspaper accounts, and thus a general belief grew up that the inscription was the product of some Scandinavian immigrant who spoke a mixed English-Norwegian dialect.

In the meantime the stone had been sent to a north-western university in Evanston where it came to the attention of the philologist, Professor George O. Curme. He had photographs of the inscription taken and sent to several scholars in Europe. Presumably these scholars were of the opinion that a pre-Columban expedition into the very heart of America was not only improbable but impossible, and that an alleged runic inscription recording such a fact was a fantastic absurdity which did not merit serious consideration. At any rate no

detailed account or study of the inscription was published by them. The conclusion reported by them was that the inscription was a 'clumsy fraud' perpetrated by some Swedish or Norwegian immigrant who had lived so long in America that he wrote a 'mixture of English and Norwegian' as shown by the presence of several alleged English words in the inscription.

This verdict was generally accepted as final, and the stone was sent back to the finder branded as a forgery. Apparently disgusted with having had so much trouble about a 'lying runestone', the owner threw it down in front of his granary (fortunately with the inscribed side down), where it lay for nine years esteemed only as a fair doorstep and a tolerable place to straighten nails and rivet harness straps.

Nine years later the present writer chanced to visit the neighbourhood for the purpose of gathering material for a history of the Norwegian immigration. He found that the most vivid memory of former days which the people there had to relate was the discovery of this runic stone. As I had spent much time while in college in the study of runes and Old Norse, the story of this find interested me greatly. It was therefore with eager expectancy that I hunted up the owner of the stone and asked to see it.

Out in the farmyard he showed me a large, dark-coloured stone lying near the granary door, half sunken in the ground. It was thirty-one inches (78.7 cm.) long, sixteen inches (40.6 cm.) wide, and six inches (15.2 cm.) thick. The weight was two hundred and two pounds (91 kg.). There was no inscription on the upper side, but the farmer turned the stone over. This under side presented on the whole a very smooth appearance with but few fractures, and the inscription which there appeared was technically a most excellent piece of work. Most of the lines were evenly spaced and the characters were of almost uniform height—about one inch. The neat inscription continued for about three-fifths of the length of the stone. Although the characters were dark and weathered, they were quite distinct except in the lower left hand corner of the inscription. Here the characters were almost worn away. The inscription continued on the flat edge which did not have the natural smoothness of the face of the stone and showed evidence of having been trimmed smooth with a cold-chisel. Here too, the inscription covered three-fifths of the length of the stone.

Evidently the lower uninscribed part of the stone was intended to be placed in the ground.

My wonder increased when I saw the length of the inscription. It is one of the longest of all runic inscriptions. I counted 220 characters, besides sixty-two double dots which were used to separate the words. Evidently the writer of this strange inscription was an artist in palæography who had a long story to tell. Although I assumed that the inscription was spurious, inasmuch as it has been condemned by several scholars, I persuaded the owner to let me take it home with me, thinking it would be an interesting souvenir and exemplification of my favourite subject of study.

Some time later I began the study of the inscription. . . .

This reading and the following translation have since received general acceptance. The words in brackets are omitted in the inscription; those in parentheses are explanatory. Nine lines appear on the face of the stone as follows:

1. [We are] 8 Goths (Swedes) and 22 Norwegians on
2. [an] exploration-journey from
3. Vinland through (or across) the West (i.e. round about the West) We
4. had camp by [a lake with] two skerries one
5. day's journey north from this stone
6. We were [out] and fished one day After
7. we came home [we] found ten [of our] men red
8. with blood and dead AV[e] M[aria]
9. Save [us] from evil

The following three lines appear on the edge of the stone:

10. [We] have ten of (our party) by the sea to look
11. after our ships (or ship) fourteen days' journey
12. from this island [in the] year [of our Lord] 1362

My study of the inscription soon convinced me that, regardless of whether the inscription was true or false, it had been condemned largely on erroneous premises. For instance, the most common objection, that its language was not Old Norse and therefore the inscription must be a forgery, was manifestly a misconception, for Old Norse had ceased to be the

language of Sweden and the greater part of Norway long before 1362. In presenting my translation of the inscription, I therefore called attention to some of these misconceptions and urged that the inscription be given a new and more thorough consideration. This article, which revived the subject after it had lain dead and almost forgotten for nine years, was printed in *Skandinaven*, one of the leading Scandinavian newspapers of America, on 17 January 1908.

My request that the inscription be given a new hearing was not in vain, for a very lively discussion of its faults and merits followed. Every word and character on the stone was subjected to a most searching scrutiny, and hundreds of articles for and against its genuineness were written and printed. It has been exhibited in France and Norway, as well as in numerous places in America. Geologists and chemists have made microscopic examinations of its surface and substance, and philologists and historians have made minute studies of its text and message. Very few inscriptions have received such keen study by people of all classes.

Among the first to give the Rune Stone serious attention was the Norwegian Society of Minneapolis—a literary club of the more prominent Norwegians of the city. In the autumn of 1908 the Society appointed a committee to inquire into the facts concerning the discovery of the stone. Doctor Knut Hoegh, one of the leading physicians of the city, was chairman of the committee and spent much time in investigating the subject. In December 1908, and several times during the following year, he made trips to Kensington and the vicinity, interviewed all persons reputed to have any knowledge of the finding, and secured numerous affidavits. In the autumn of 1909 the committee concluded its investigation and presented a report to the Society whose summary follows in translation:

1. The stone was found upon the spot where it was reported to have been found.
2. The stone which Mr. H. R. Holand now has is the same as the one that was found by Olof Ohman.
3. None of the persons who had anything to do with the finding of the stone, or who saw the place, the stone or the stump of the tree (under which it was found) soon afterwards, can under any circumstances be supposed to have had anything to do with carving the inscription.

4. The stone must have been in the ground long before the present cultivation of the district took place. Its weathered appearance, the worn appearance of the runes, and the circumstances of the roots (of the stump) seem to prove the last point, when it is taken in connexion with the stated facts.

The investigation conducted by the Norwegian Society under the direction of Dr. Hoegh concerning the physical facts connected with the discovery of the stone, while made by laymen, was as thorough as possible, and the findings of the committee have since been sustained by more searching investigation. However, the report of the committee did not have any extensive publicity, and a lively discussion of the question involved in Paragraph 3 of the report continued. Since the first verdict concerning the origin of the inscription was to the effect that it had been written by some Scandinavian immigrant who wrote a mixture of his mother tongue and English, the problem merely seemed to be to find the identity of this forger. The neighbourhood had been settled only about thirty years, and as the early inhabitants were well known locally, this identification did not seem impossible. Mr. Ohman, as the finder of the stone, early came under suspicion. Professor N. H. Winchell, State Archæologist of Minnesota, and others thoroughly investigated these rumours and found them wholly spurious. The Museum Committee of the Minnesota Historical Society who sifted all these rumours says: 'No one of all who have interviewed Mr. Ohman, whether believers or non-believers in the authenticity of the inscription, has seen any reason to question his veracity.'

Some time later a more important charge was made that a former Lutheran clergyman, named Sven Fogelblad, who spent his last years around Kensington, had made the inscription with the aid of two accomplices. Professor Winchell also thoroughly investigated this report and found that it had no possible basis in fact.

A more important contribution to a thorough understanding of this inscribed stone is the report published by the Minnesota Historical Society. In January 1909, the Society felt called upon to take official notice of the stone and requested its museum committee to investigate the authenticity of the inscription. This committee consisted of the following members: Professor N. H. Winchell, geologist and State Archæologist; Rev. E. C.

Mitchell, antiquarian; O. D. Wheeler, lawyer; F. J. Schaefer, President, St. Paul Seminary; and Dr. Warren Upham, geologist and Secretary of the Society. This committee had the stone in its keeping for about two years and gave it a searching physical examination. Its members made several investigations in the locality where it was found, interviewed many local residents, and sifted several rumours and theories concerning the origin of the inscription. They also studied all published articles for and against the stone and submitted moot questions to experts. After more than a year of careful inquiry, the committee on 21 April 1910, unanimously adopted a 'preliminary report', which reads as follows:

Resolved, That this Committee renders a favourable opinion of the authenticity of the Kensington Rune Stone, provided, that the references to Scandinavian literature given in this Committee's written report and accompanying papers be verified by a competent specialist in the Scandinavian languages, to be selected by this Committee, and that he approve the conclusions of this report.

About two weeks later, before the committee had selected its specialist, it received a manuscript copy of an address on the Kensington Rune Stone by Professor G. T. Flom, delivered before the Illinois State Historical Society at its annual meeting, 5-6 May 1910. This contained a formidable array of linguistic objections. With this new and important contribution to its philological material, the committee resumed its study of the inscription. After giving detailed consideration to Professor Flom's dissertation, the committee came to the same conclusion as before. A brief rebuttal of Flom's arguments was added to the report, whereupon Professor Gisle Bothne of the University of Minnesota was selected to act as a specialist in verifying the references mentioned above. By this time the summer vacation had begun and Bothne sent word that he could not accept the appointment as he was going away. He added that he did not believe the inscription was genuine because he considered the language was faulty. As an example he mentioned that the rune *þ* was not used properly. The committee did not select any other referee but published its report in December 1910.

After this report appeared in print, the inscription was the

subject of much argument both at home and abroad. The committee therefore waited about three years before rendering its final report. After all arguments on both sides seemed to have been presented, and finding no reason for changing its conclusions, the committee added as its final verdict that 'after carefully considering all the opposing arguments, the Museum Committee of this Society believe its [the Kensington Stone's] inscription is a true historic record'.

The committee has been criticized for not having had a competent scholar in Scandinavian languages present at its sittings, but this was found impracticable. Instead it obtained opinions on all moot linguistic questions from scholars on both sides. As the committee says in its report: 'With one exception the members of the committee are all linguistic scholars and are capable of judging the force of linguistic arguments, *pro* and *con*, and we have attempted to compare judicially the evidence that has been adduced.'

It is thirty years since the Minnesota Historical Society published its committee's report, and since that time the study of this runic inscription has made important advances. Many points which then seemed obscure have now been clarified. Linguistic and runic usage of fourteenth-century Scandinavian has been subjected to intensive study, and many misconceptions have been cleared up. Much new information has also been gained about fourteenth-century history as far as it pertains to this subject.

This long discussion and wide publicity has served another important end. It has brought to light a number of ancient arms and implements which have been unearthed by pioneer farmers in tilling their soil. These archaic finds dating from the Middle Ages have all been discovered in the general region where the stone was found. In 1911 and again in 1928 the present writer made a study of such arms and implements in a large number of museums in six European countries. It is believed that these finds will be found to have great significance in the question of the authenticity of the Kensington Rune Stone.

In addition to the runic inscription of Kensington and a number of fourteenth-century war implements, there have also been found no less than five other landmarks of an unexpected kind which show that white men visited this part of Minnesota hundreds of years before the arrival of the earliest settlers.

These various indications of white men's presence in Minnesota in pre-Columbian times will be discussed in the following pages.

The stone has now been returned to the county where it was found and is on exhibition in Alexandria, the county seat.

The region around Kensington, Minnesota, where the rune stone was found in 1898, was of comparatively recent settlement by white men, as for that matter was the entire state of Minnesota. The first farmers came into Minnesota about 1850. By 1870 the tide of home-seekers had rolled three hundred miles westward and the advance guard of pioneers had taken possession of the lands around the later village of Kensington. Most of the land in this part of Minnesota consists of rolling prairies of fertile soil, but the farm on which the stone was found, with its immediate surroundings, is of a different character. This land consists of hilly, stony moraines, which were covered with stunted timber and surrounded by marshes, and the pioneers therefore thought that this rough land would never be wanted for farming and used it only as a community wood-lot. In 1886 a railroad was built through the district, a station was established called Kensington, and the less desirable lands began to be homesteaded and developed into farms. Thus it happened that Ohman came in 1891, preferring the labour of carving a farm out of this wilderness to going far out into Dakota where good land could be had cheap.

Seven years later while clearing some forest land on the edge of a swamp, he discovered the so-called Kensington Stone.

In determining the question of the Kensington inscription, the circumstances surrounding the discovery of the stone are of prime importance. If these show that the stone could have been placed in its finding spot recently, the authenticity of the inscription becomes suspicious. On the other hand, if the condition of the stone *in situ* shows that it was there before that part of the state was settled, it is important proof of the genuineness of the inscription. It is impossible to conceive of any scholar, having a knowledge of runes and Scandinavian philology, risking his life by penetrating far into a savage wilderness, inhabited only by hostile Indians, and then sitting down to chip for days upon a stone that would bring him neither honour nor riches. If the inscription is a fraud, it must have been perpetrated after Western Minnesota had been made safe by the settlement of the pioneers.

Fortunately the circumstances of the discovery of the stone have been recorded in five affidavits made by persons who were present at the discovery or soon afterwards. Our information concerning the basic fact is therefore ample and reliable. These affidavits were personally obtained by Dr. Knut Hoegh. The following is the affidavit of Olof Ohman, the man who discovered the stone:

I, Olof Ohman, of the town of Solem, Douglas County, State of Minnesota, being duly sworn, make the following statement:

I am fifty-four years of age, and was born in Helsingeland, Sweden, from where I emigrated to America in the year 1881, and settled upon my farm in Section Fourteen, Township of Solem, in 1891. In the month of August 1898, while accompanied by my son, Edward, I was engaged in grubbing upon a timbered elevation, surrounded by marshes, in the south-east corner of my land, about 500 feet west of my neighbour's, Nils Flaten's, house, and in the full view thereof. Upon removing an asp, measuring about ten inches in diameter at its base, I discovered a flat stone inscribed with characters, to me unintelligible. The stone lay just beneath the surface of the ground in a slightly slanting position, with one corner almost protruding. The two largest roots of the tree clasped the stone in such a manner that the stone must have been there at least as long as the tree. One of the roots penetrated directly downward and was flat on the side next to the stone. The other root extended almost horizontally across the stone and made at its edge a right-angled turn downward. At this turn the root was flattened on the side toward the stone. This root was about three inches in diameter. Upon washing off the surface dirt, the inscription presented a weathered appearance, which to me appeared just as old as the untouched parts of the stone. I immediately called my neighbour's, Nils Flaten's, attention to the discovery, and he came over the same afternoon and inspected the stone and the stump under which it was found.

I kept the stone in my possession for a few days; and then left it in the Bank of Kensington, where it remained for inspection for several months. During this interval, it was sent to Chicago for inspection and soon returned in the same state in which it was sent. Since then I kept it at my farm until August 1907, when I presented the stone to H. R. Holand. The stone,

as I remember, was about thirty inches long, sixteen inches wide, and seven inches thick, and I recognize the illustration on page 16 of H. R. Holand's *History of the Norwegian Settlements of America* as being a photographic reproduction of the stone's inscription.

(Signed) OLOF OHMAN

(Then follow further affidavits concerning the finding.)

These affidavits make it clear that the stone was found on a timbered elevation, almost surrounded by marshes, wrapped in the roots of a tree eight to ten inches in diameter. It is also clear that the stone must have been there at least as long as this tree had grown there, for its largest roots exactly conformed in shape to the surface of the stone at the place of contact and were flat on the inside where they curved around the edges of the stone.

The important question is now: How old was this tree? The stump had been destroyed during the ten years while the stone humbly served as a doorstep to Mr. Ohman's granary. The tree was an aspen (*populus tremuloides*), and this variety grows rapidly under favourable conditions. The following statement on the growth of aspens in a bulletin on aspens published by the U.S. Forest Service is pertinent:

The aspens are commonly considered among the most rapidly growing trees of North-Eastern United States and this is undoubtedly true of young trees in favourable situations. The rate of growth, however, is frequently very much overestimated, especially in the case of full-grown trees. . . .

The age may be obtained with reasonable certainty directly from the tree itself by counting the rings of growth, since it is established beyond doubt that, except in rare cases, one ring is regularly added each year. Such counts show that while aspen ordinarily exceeds in rapidity of growth the spruce, fir, beech, sugar maple and even paper birch during the first twenty or thirty years, its growth rate decreases thereafter, while many of the other species are still in their period of rapid development.

In the summer of 1910, Dr. Knut Hocgh of Minneapolis and the writer went to the finding-place to learn something about the age of similar trees. We reasoned that trees of the same species, grown on the same elevation and soil, having the same conditions of shade and moisture, would be, if equal in diameter, approximately equal in age. Unfortunately, we found

that all these conditions no longer obtained. While Mr. Ohman still had a large wood-lot, this had been logged and cut over many years previously.

Mr. Ohman kindly consented to cut down such trees as were deemed necessary. As the exact size of the tree was somewhat uncertain, we requested him to select a tree which most nearly compared to his mental image of the tree beneath which the stone was found.

He found two trees which were approximately of the right size, but objected that as these trees were healthy, they would not correctly represent the tree under which the stone was found as that was a stunted, sickly tree. In lieu of anything better these trees were cut down and marked A and B. Later on he found a stunted tree which in its growth, but not in its size, resembled the 'rune stone tree'. Two cross sections of this were cut and marked C and D. They measured five and a half inches. The following is a signed statement which Mr. Ohman gave us with the four cross sections.

Kensington, Minn., 16 July 1910.

The sections A, B, C, D were all cut on my property in the vicinity of where the rune stone was found, under the same timber conditions. The section A is of the same size as the tree which grew over the stone; but both A and B are from much more luxuriant trees than that which stood over the stone. Sections C and D are from a tree which in its growth is more comparable with the rune stone tree but is about three inches less in diameter than that.

(Signed) OLOF OHMAN

These cross-sections were given to Professor N. H. Winchell, Minnesota State Archæologist, who caused them to be dried and varnished. When this was done the annual growth-rings appeared quite distinctly, and, according to Winchell, showed the following number: A, 37 rings; B, 42 rings; C, 38 rings. (D showed a cross section from the same tree.) At least five years must be added to all these figures for the decayed and blurred centres where the growth-rings could not be counted.

As the stump under which the stone was found was not preserved, we do not know the exact diameter of the tree. But we have seven affidavits and statements describing this stump and made by people who inspected it immediately after the

stone was found. In these statements the estimates of the diameter vary from $8\frac{1}{2}$ to 10 inches in size. We cannot tell which of these estimates is the most correct, but if we take the mean average of them all, we shall probably be close to the exact size. These seven estimates are as follows:

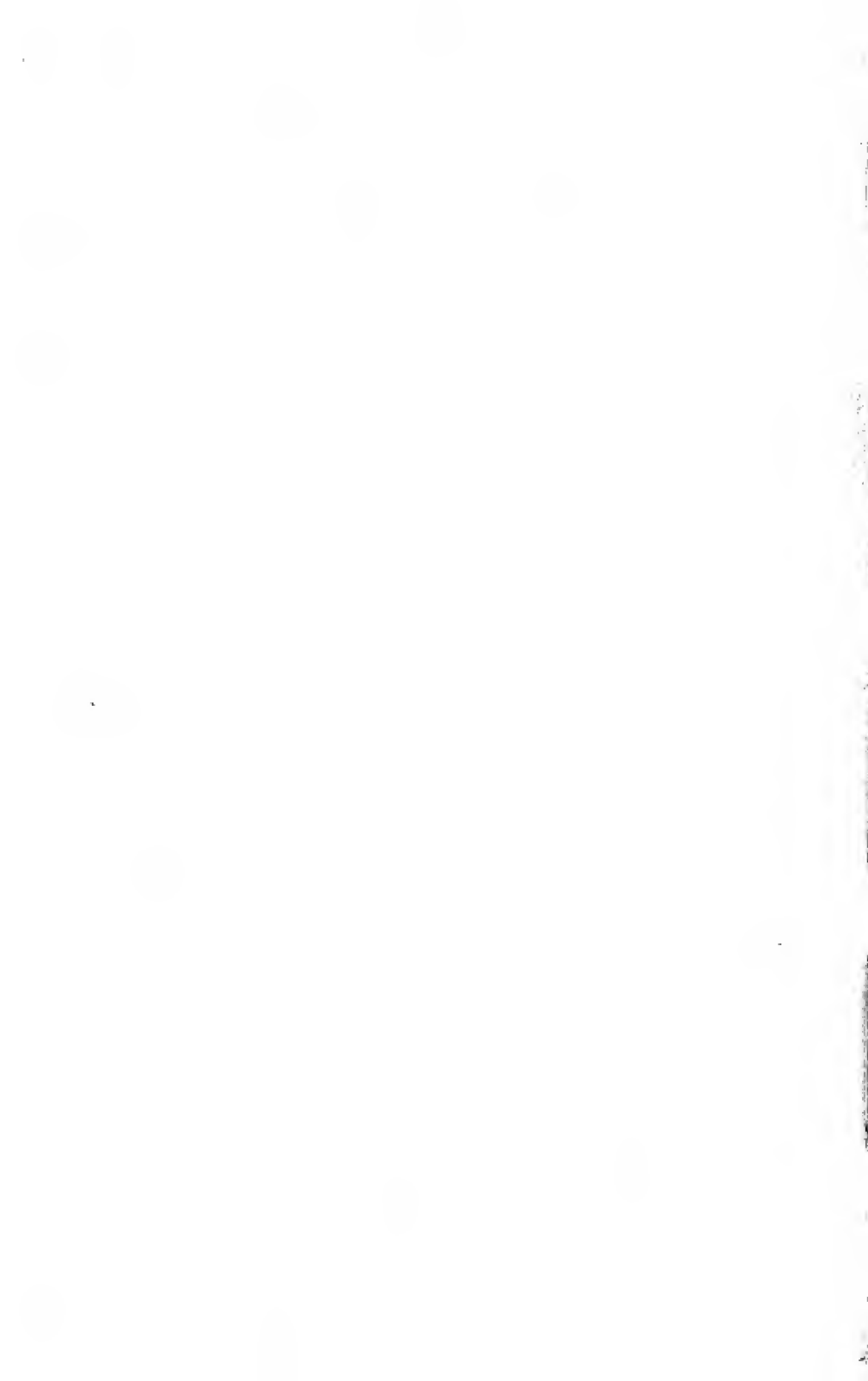
O. Ohman's affidavit, 'about 10 inches'	10 inches
N. Flaten's affidavit, 'about 8 to 10 inches'	9 "
R. Bentson's affidavit, 'from 8 to 10 inches'	9 "
S. Olson's affidavit, 'from 8 to 10 inches'	9 "
E. Ohman's affidavit, 'about 10 inches'	10 "
O. Ohman's sample (Sec. A) 'approximately same size'	$8\frac{3}{4}$ "
O. Ohman's second sample (Sec. B)	$8\frac{1}{2}$ "

Taking the mean average of all these estimates we find that the tree under which the stone was found had a diameter of 9.2 inches at its base. As C with a diameter of 5.5 inches was 43 years old (five years being added for the decayed centre), then the tree under which the stone was found, having a diameter of 9.2 inches, would be 72 years old, for $5.5 : 9.2 :: 43 : 72$

Seventy years back from 1898, the year the stone was found, brings us back to 1828. This was about twenty years before the state of Minnesota was settled by white men. Douglas County, where the stone was found, had no white settlers of any kind until 1858, when a few Yankee trappers and town-site speculators settled in the vicinity of Alexandria, about fifteen miles from the finding place of the stone. The first Scandinavian pioneer in the county was a Mr. Nils Mickelson, who settled in the neighbouring township in 1864. He also was a trapper. In 1867 came the first group of farmers. The rune stone in all likelihood was therefore in its finding place almost forty years before the pioneer farmers settled there. After 1867 the settlement of the county advanced steadily. The first railroad reached the county in 1878 at Alexandria. Kensington was reached by a railroad in 1886.

Several European scholars, impressed by the circumstances of the stone *in situ* and by the weathered appearance of the inscription, have suggested that the inscription was probably made about a hundred years before it was found. But in so doing they have forgotten that Minnesota at that early time

was practically an uninhabited wilderness as far as the presence of white men is concerned, Only a few scattered fur traders then sojourned in Minnesota, and these men are all known, for they had to get their supplies from, and bring their peltries to, the agencies of the fur companies. Among these early fur traders not a single Swede or Norwegian is known.



MEXICO



A. M. TOZZER

CHICHEN ITZA: THE WELL OF SACRIFICE

(FROM 'CHICHEN ITZA AND ITS CENOTE OF SACRIFICE', MEMOIRS OF THE
PEABODY MUSEUM OF ARCHÆOLOGY AND ETHNOLOGY, HARVARD
UNIVERSITY, Vols. XI AND XII, 1957)

In Mexico in North Central Yucatan there are the remains of one of the greatest of America's ancient cities—Chichen Itza. Its life was a long one, perhaps the longest of any of the cities of the New World. Founded about the eighth century A.D. by the Maya, its chequered life continued through the centuries until it was finally 'destroyed' in 1451. It became a religious centre of pilgrimage, and many were the offerings both human and material that were thrown into its Sacred Well. At the beginning of the sixteenth century the Spaniards conquered Yucatan and even at that date, although the power of Chichen Itza as a town had vanished, the Sacred Well drew pilgrims from far and wide. In the waters of the Well, or Cenote as it is called, the gifts to the gods lay hidden for three hundred years and more until archæologists dredged the place and recovered much of the treasure and the sacrificial bones.

The following extract is from Alfred M. Tozzer's detailed study 'Chichen Itza and its Cenote of Sacrifice'. Until his death recently he was a leader in the field of Middle American studies.

WE do not know the actual date when Bishop Landa was at Chichen Itza. He arrived in Yucatan in 1549 and remained here until 1563. It was during this first period of residence that he was at Chichen. He went back to Spain for ten years before he returned as Bishop. Six years later (1579) he died in Merida. . . .

Of Chichen Itza he writes: 'At some distance in front of the staircase on the north [side of the Castillo], there were two small stages of hewn stone, [each] with four staircases, paved on the top, where they say that farces were represented, and comedies for the pleasure of the public.' These two structures are now known respectively, as the Tomb of the Chac Mool

or the Temple of the Eagles, and the Temple of the Cones, the latter standing almost in the very centre of the court.

The third structure in the court, near and north of the Chac Mool tomb, is called Mausoleum II or Temple of the Skulls. . . .

'From the court in front of these stages,' observes Landa, 'a wide and handsome causeway runs, as far as a well which is about two stones' throw off.' This road, which starts about 300 feet north of the Temple of the Cones, is built on a rubble foundation and is paved; it is about 33 feet wide and is raised slightly above ground level. The road runs for about 900 feet to the south side of the small structure which stands on the very brink of the well. At the north end on the east side is a paved platform from which the victims of sacrifice are supposed to have been hurled. . . .

This sacred well is about 168 feet in north-south diameter, over 200 feet east-west. . . . The walls are practically vertical except on the south side. Unlike the grand cenote or Xtoloc Cenote which is south of the Castillo and from which the natives obtained their water, there is no path or other means of reaching the water. The water level in the well evidently fluctuates; it has been reported anywhere from 60 to 80 feet below the rim. The greatest depth of water lies near the centre and averages about 36 feet; this decreases gradually toward the sides. Between 30 and 60 feet of accumulated detritus, mud, and blue silt rest on the uneven bottom of the well. Landa writes of 'the very green water and I think that the groves with which it is surrounded cause this'. . . .

On the south side of the pool the wall overhangs 14 feet measured from the surface of the water. From about 70 feet along the east side the upper portion of the wall projects in a great shelf-like edge about 20 feet above the water. The walls are made up of projecting ledges, due to the varying degrees of hardness of the strata. There is a slightly northward dip of the rock. On the west side a narrow beach has formed upon a ledge, almost level with the water. On this grow a number of native cork trees. . . .

The appearance of the Sacred Cenote in 1904 is well described in the field notes of Cole (1910), who was good enough to place them at my disposal. He writes:

The impression, as one comes suddenly upon these deep 'wells' in the middle of a dense forest, is a memorable one. They look like

circular quarries, 150 feet or so in diameter. The sides are practically vertical, sometimes overhanging, with the trees hanging out over the space at the top and a few here and there where they can find a hold on the walls. In the bottom is water, which has a brownish green appearance apparently on account of organisms in it. . . . The walls are weathered unevenly, leaving holes of greater or less size in which live iguanas, and other lizards may often be seen clambering about over the rocky sides. . . .

We come next to the Maya and early Spanish accounts of the ritual practised at the Cenote. Unlike most archaeological sites in the New World, Chichen has a relatively abundant literature, without which we would have little information on the ceremonial side of the life of the people other than that offered by the specimens recovered from the well. Accounts of the Cenote as a place of sacrifice date, with two exceptions, from the days during or immediately following the Spanish conquest (from about 1536 to 1588); most of them indicate that the ritual at the Cenote still flourished when the descriptions were written. . . .

The earliest Spanish references to the Sacred Cenote at Chichen Itza are to an attempted native pilgrimage (1536) to supplicate the rain gods in a time of drought. This ended in a holocaust. . . .

Landa was perhaps the most dramatic and the most important single figure connected with the early Spanish history of Yucatan. He was called the *historiador primordial* of this country. He was born 'of noble parents' in Cifuentes, Toledo, in 1524. At the age of sixteen he joined the Franciscan Order in his native town and was one of the first friars brought to Yucatan by Nicolas de Albalade, the Procurador, in 1549. At once his zeal was recognized and he held a long succession of offices in the Church, ending, after many vicissitudes, as Bishop. His work and methods of christianization have been variously estimated. He has been regarded 'as a saint and an odious persecutor', as an impetuous and ardent servant of the Lord who won approbation of the multitudes, and as a cruel zealot. He has been described as dying 'in the odour of sanctity . . . and he is stigmatized as a fanatical, extravagant and cruel man'. In some respects both extremes seem to be true. The *auto da fé* held by him at Mani in 1562 brought down upon his head the denunciation of Bishop Torao, and Landa was forced to return to Spain for examination where he was finally exonerated. It

was while he was there that he probably wrote his famous *Relación de las Cosas de Yucatan* (1566). . . .

Probably the most important information conveyed by the Bishop are various entries regarding the Cenote of Sacrifice. One of these concerns the vain attempt of the Xiu to make a pilgrimage to the well. Three other entries are given here. . . .

We will tell about the well into which they threw living men in sacrifice, as well as other beautiful things. . . .

Sometimes they threw living victims into the well of Chichen Itza, believing that they would come out on the third day, although they never appeared again. . . .

Into this well, they have had, and then had, the custom of throwing men alive as a sacrifice to the gods, in times of drought, and they believed that they did not die though they never saw them again. They also threw into it a great many other things, like precious stones and things which they prized. And so if this country had possessed gold, it would be this well that would have the greater part of it, so great was the devotion which the Indians showed for it.

Next in importance to Landa's references is the account of the ritual at the Cenote of Sacrifice given in the *Relación de Valladolid*:

In this Cenote the lords and important men of all these provinces of Valladolid were accustomed to fast for sixty days without raising their eyes in this time even to look upon their wives nor upon those who brought them food, and this they did as a preliminary to, upon reaching the mouth of that Cenote, throwing into it at break of dawn some Indian women belonging to each of those lords, whom they had told to ask for a good year and all those things which seemed best to them [the lords]. And thus these Indian women having been thrown in without being bound, but flung down as from a cliff, they fell into the water striking it with great force. And at exactly midday the one who was to come out shouted for them to throw her a rope to take her out, and when she came up above half-dead, they made great fires around her, censuring her with copal. And when she came to, she said that there were many of their race below, men as well as women, who received her, and that when she raised her head to look at some one of them, they gave her severe blows on the neck so that she would keep her head bowed down, all of which occurred within the water in which they say there were many hollows and holes. And they replied to her whether they would have a good or bad year according to the questions which the Indian woman put. And if the demon was

angry with one of the lords of those who threw in the Indian women, they already knew that [her] not asking to be taken out on the point of noon was because he was angry with them, and such a one never came out. This seems a likeness to what happened in the cave of Salamanca. Then, having seen that she did not emerge, all the Lord's people and he himself threw large stones into the water and with a great hue and cry took flight from there.

Thomas Lopez Medel (1612) was a Franciscan, auditor and judge of the Audiencia of Guatemala and the Confines and, later, one of the judges to sit at the trial of Landa. He finally absolved Landa in regard to the inquisition inaugurated by him. His *Ordinances* were probably written about 1552; the *Relación* is dated 1612. The latter furnishes material on the victims offered at the well and discusses the sacrifice both for rain and for divination. His account of the ritual follows:

Among other sacrifices which the devil had taught them in those provinces of Yucatan was one of which they made use in time of necessity, and when they were in need of rain for their maize, which sacrifice they made with the death and offering of one or two Indian virgins (*doncellas*) or the number they wished. In this way they chose the virgin as seemed best to them and they took her to Chichen Itza, where the lodging of all the lords was and where the priests were and the principal *cu* and place of sacrifice, and from there they all went in procession with her by a paved causeway, all of slabs, which came to an end at a large and deep Cenote which was there. . . . And they placed her in a shrine which was near there, where the priests withdrew with her. And they instructed her and informed her concerning what she was to ask there from their demons and false gods. And they brought her forth from there, and having tied her with a long rope, they lowered her down to the depth of the water, ducking her many times until they drowned her, all the people charging her and asking her when they threw her in to be a good mediator with their false gods in order that they might send them rain. And in this manner the sacrifice was completed, leaving her drowned in the Cenote. Some old Indians of that province affirmed that they sometimes saw in these sacrifices a fierce and frightful dragon, which they represented as a large crocodile, which came out upon those waters as if to receive that sacrifice which they sent him there. And, certainly, considering the nature of the place, nothing else can be thought except that that was some demon, because a crocodile or dragon could not live there, the nature of the water opposing it; nor has such a thing been seen in any of the other Cenotes, nor do I believe it possible there. . . .

The *Relación* of Landa gave the impetus for two attempts to dredge the famous well, for he observed: 'They also threw into it a great many other things, like precious stones and things which they prized. And so if this country has possessed gold it would be in this well.' The hope of verifying the Bishop's words was uppermost in the minds of those who planned the dredging of the well, along with the lure of finding some of those 'things' which the Maya 'prized'.

Landa's account of the Cenote of Sacrifice, written about 1566 but first published in 1864, failed to arouse any of the early explorers to action until 1882, when Désiré Charnay visited Chichen. Of his unsuccessful attempt to dredge the sacred well he writes, 'Aware of the treasures the cenote might contain, I had provided myself with two automatic Toselli sounding-machines, one of which is capable of bringing up half a cubic metre of deposit; but unfortunately I could not get it to work, owing to the height of the walls, the depth of the water, and the enormous detritus of several centuries.'

A second attempt, this time successful, was made to dredge the well by Edward H. Thompson, resident of Yucatan from 1885 to 1923. In 1894 he acquired the hacienda of Chichen Itza, a property previously owned by the historian Crescencio Carrillo y Ancona, Delia Morena Canton, Emilio Garcia Fajardo and Leopoldo Canton Frexes. . . .

Thompson's most important and spectacular work was the dredging of the Sacred Cenote at Chichen. Stephen Salisbury of Worcester and Charles P. Bowditch of Boston were the main instigators and most generous supporters of Thompson's work, which was done almost exclusively under the private direction of Mr. Bowditch and of Professor F. W. Putnam, then Director of the Peabody Museum. With two exceptions, the result of all Thompson's explorations and excavations, consisting of objects, photographs, moulds, and other data, were presented to the Peabody Museum by Bowditch, and the greater part of his publications were brought out by the Museum.

After numerous negotiations and delays in obtaining the necessary machinery, dredging began on 5 March 1904. The first campaign ended on 1 July 1907. Between these two dates the work was by no means continuous. . . .

Leon J. Cole, then a graduate student in biology at Harvard University, was present at the beginning of the operations. His notes, kindly made available by him, state:

On 26 February 1904, the road was cleared to the Cenote and a rope ladder was made for getting down to the level of the water, where a platform was built, and a raft was constructed and launched from the small beach on the west side of the pool.

Just east of the ruined structure on the southern edge of the well, a place was cleared of debris and a stiff-legged derrick erected, having a twenty-foot upright and a boom, thirty feet in length. This was operated by a double-handed winch, two or four men working it. The dredge was a Harwood orange-peel bucket of a capacity of two and a half cubic feet. Around the perimeter of the pool a series of numbered stations was established and a divided arc at the foot of the derrick corresponded to these stations. Dredging was first started in the radius allowed by the thirty-foot boom. To reach outside of this sector, a rope was attached to the top of the dredge, and this ran around a pulley in one of the numbered stations on the perimeter of the pool on the opposite side of the Cenote, and ended at the base of operations. By using this rope the dredge could be pulled to any place between the home station and that opposite. By changing the position of the pulley the dredging could theoretically reach anywhere within the well. As a matter of fact, Thompson argued that all the various offerings were probably thrown into the pool from the place where the derrick was erected, to the east of the 'shrine'.

One of Cole's favourite stories concerned his making a dummy of the shape and the average weight of a human body, and noting how far into the pool he could throw it. Only an area with a radius of about thirty feet from the dredge was actually covered by the operations. This was, of course, only a very small part of the expanse of the well.

The dredge was first operated on 5 March 1904. On March 10th the Cole diary reads:

They made ten hauls in the morning and six or eight in the afternoon. In the fifth haul in the morning Rafael found a human humerus and, in the next, what appeared to be a finger bone. . . . March 11th: During the day the dredge brought up a number of bones . . . also several pieces of pottery. These things came from nearly fourteen feet down in the mud (so the mechanic in charge told me).

The first pieces of copal incense arrived on March 12th. Wooden objects soon put in an appearance. The first piece of jade, a round bead, came up on the 19th. It was not until May 28th that any metal was recovered. On this date two copper bells appeared. Up to June 1st, practically no stone objects were encountered. It was not until early November that jade and pottery objects came out

in any quantities. The next month marked the appearance of the first gold specimens other than a small gold mask on a wooden sceptre which had come up some time before. . . .

By means of a rough boat, many light objects, especially the balls of copal, were recovered; removed from the mud by the dredge, they usual floated on the surface of the water.

The dredge would be brought up and swung over the land. All large objects and many of the smaller ones were removed before the dredge was opened. The remainder, freed by opening the dredge, were allowed to fall in a pile. This was gone over carefully for smaller objects but, unfortunately, only a portion of this debris was sifted either when it was wet or after it had dried. The objects were usually washed in clear water to free them from the mud immediately after removal from the dredge. The wooden material was kept wet by immersion in water.

It was soon found that no possibility of stratification could be noted as the heavier objects had sunk to the lower levels when they were thrown in.

It should be admitted that the nature of the operations precluded the possibility of the care usually taken in the excavation of a terrestrial site. By ordinary archæological standards, the work could not be considered either exhaustive or complete. There is every reason to suppose that the well, and even the debris, still contains objects of archæological interest.

In a letter to Thompson dated 20 September 1905, Bowditch proposed an engine to operate the winch. This was tried, and in the following March, Thompson reported:

I have had to abandon the use of the engine and for a cause that I do not think anyone could imagine or foresee. To explain, the wall surface of the whole Cenote is built up of consecutive layers of rock of varying degrees of hardness, separated by thick layers of a finely divided flour-like substance, called by the natives *kut*. . . . The trepidation of the engine and the trembling force of the rapidly up-rising heavily laden bucket caused such a downpour of this substance . . . that the whole water surface of the Cenote became of a milky colour and finally pieces of the ledge itself . . . commenced to fall.

A coffer-dam was suggested as a possible means of working the fertile zone near the shrine without the water hazard. This was declared impracticable as the sides and bottom of the Cenote are porous and it would have been found most difficult

if not impossible to keep the portion protected by the dam free from water. Pumping the well dry was practically hopeless for the same reasons.

As early as December 1905 Thompson wrote, 'I think that when I do commence work I shall decide to use the diving outfit. I shall, however, meanwhile prove the outfit practically and can then determine definitely.' There is no further reference to making use of diving during this first campaign ending in 1907. It was in May 1909 that the quotation regarding diving operations is found; in the final agreement of November 1909 Bowditch refers to diving for the first time in the correspondence now available and states that Thompson 'will make the exploration of the Cenote with a diver's apparatus to be furnished by him, and that he will superintend the work in person'. It seems quite evident that the work done by means of diving yielded very meagre results as, in 1910, Thompson suggests rigging up the dredge again.

In spite of a difficult terrain and with techniques which to-day would seem crude, this accomplishment, started fifty years ago, was of the greatest consequence. . . .

There are three aspects of the Cenote material which give it unique significance in archæological study. First, the objects were offered to the gods of rain by a native population in elaborate religious rites that are explained by an abundant literature. Second, these objects thrown into the huge sink-hole represent a great span both in time and in area. This is particularly true of the jades; the metals come all the way from Guerrero and Oaxaca in the north, to British Honduras and Honduras, southward to Veraguas and Cocle in Panama, and even to Colombia in South America. Third, the objects preserved here under water are of perishable material that usually survives only at archæological sites in arid countries. There is perhaps no other single collection in New World archæology that has offered so comprehensive a view of the æsthetic life of an ancient people. The amount and diversity of the articles are evidence of the Cenote's importance in the religion of the Maya toward the end of their existence as an independent people untouched by European culture. . . .

Landa's report not only fills out the picture at almost every turn, but inspired the dredging of the pool, an operation that has verified his observation on what the well contained in every respect except one. The country did have gold, brought in by

trade, however, in the form of bells, amulets, and plates; much of it seems to have found its way into the natural reservoir at Chichen Itza. . . .

According to the Sotuta-Homun testimony, only at this site were the victims thrown in while still living. This, of course, confirms Landa's account. Even at Chichen, according to the 1562 witnesses, only nine men at this time seem to have been actually drowned in the pool. At three other sacrifices here five men were put to death, their hearts extracted, and their dead bodies thrown into the Cenote. The early literary sources offer us a fairly complete picture of the ritual which probably took place at Chichen. . . .

There is little question but that the beginnings of these ceremonies at the Cenotes for rain do not go back to the great period of Maya culture, which ended in Yucatan about the year 1000. Until recently it was commonly thought that the ritual connected with the sacred wells was brought into the country along with other types of human sacrifice and idolatry by Quetzalcoatl and his followers about the year 1000, the beginning of Tula-Toltec Chichen and the Itza. . . .

There seems little doubt that there were two main purposes of the ancient Cenote ritual: the first was intercession for rain, the second was divination of future crops.

In 1536, the Xiu pilgrimage was an attempt to worship at Chichen in order to bring rain when 'a famine fell upon them and they were reduced to eating the bark of trees'. Landa notes that the natives made a sacrifice at Chichen in times of drought. The desire for rain again appears in the account of a rite in a Cenote of Tixpayan: 'And they made them [the idols of the gods] that sacrifice in order to be provided with sustenance and good rainy spells and because of some days it had not rained and the *milpas* were drying up. . . .'

A request for rain is implied in some of the prayers to the gods recorded in the 1562 testimony of 'idoltrous practices'. One runs, 'Lord god all powerful, provide us with what we need and give us water and that which is necessary for our sustenance'; a second asks 'for good rainy seasons'; and a third desires 'life and temporal goods'. . . .

The importance of prognostication among the Maya and Mexican peoples can be understood if one realizes that a great part of many of their pre-Columban manuscripts have to do with the sacred period of 260 days, usually called in Aztec, the

tonalpoahualli or *tonalamatl*, 'Book of the Days', a device to determine the auspicious periods in which to undertake ceremonies, go on journeys, plant and harvest fields, and engage in other secular occupations.

From the importance of the prophecy in the early manuscripts it is not, therefore, any surprise to find divination as the second main purpose of the Cenote ritual. This comes out most clearly in the famous description of the rites in the *Relación* of Valladolid, where meditation is also seen. We learn that some Indian women belonging to each of the lords were thrown into the well, and they were told that they were to ask for a good year and all those things which seemed best to them. The victim was supposed to come out of the water, shout to be rescued, and then relate to the assembled group whether the future was to be propitious. Landa was sceptical regarding the actual return of the victim. . . .

The apotheosis of the martyr is not uncommon in primitive religions. There are references among the Aztec to the belief that the persons to be sacrificed are identified as gods and, before the actual offering, are treated as deities. The Maya, so far as our testimony goes, do not seem to share this idea.

Among the Maya there seem to have been two categories of people who were given to the gods. 'Some,' according to Lopez, 'were offered and sacrificed of their own free will, while others were forced to undergo the death. The first were inhabitants and natives of the *pueblos* where they were sacrificed.'

It seems clear that offering made by the victim himself is rare. Lopez continues:

Those who were sacrificed by their own free will were few. . . . Some did it in time of necessity and on account of their pride and vainglory in order to leave that memory of themselves; and for that reason not only was the memory of those who thus killed themselves perpetually celebrated but those of that lineage were highly esteemed. The day when one of those sacrifices was offered was celebrated greatly and one of the most important holy spectacles they thought they had. There was a special place for this and it was performed with much pomp and solemnity. In the first place the sacrificial victim offered himself to the priests and made manifest to them his intention and vow, and the day on which it was to take place having been designated, the unfortunate wretch ascended to that place, which was very high, and, the people having gathered to see so sad a spectacle, he made an oration in which he gave an account of his motive and intention and he praised that kind of

sacrifice and started to tell of all those of his lineage who had offered themselves in that way, and speaking and reaching the point of counting himself among the number of the others, he threw himself down there below, dashing himself to pieces, the people at once hastening with great devotion to take a piece of that flesh in order to eat it, a thing they held in great devotion and veneration.

The most frequent victims seem to have been boys and girls. As in Mexico, children were especially acceptable to the gods of rain and of agriculture. In the Sotuta and Homun testimony there are constant references to children, often five or six years of age, being offered to the gods. Of the 168 persons who are mentioned by the witnesses in the trials as having been sacrificed, eighty per cent are boys or men and twenty per cent girls or women.

The children offered were obtained in several ways. Some were bought. We read of a boy 'whom they bought from the Cupuls who was about four years old'; again 'two bought from the Cupuls'. In another purchase the price is given as 'five red *cuentas* (beads) for each boy'. The cost of a boy seems to have run from five to ten beads. In two places, a fathom-length of thickbeads was paid for each of two boys.

There seem to have been certain persons whose office or profession it was to obtain children for sacrifice by capture. Among the Indians of the New Kingdom, according to Lopez, children were 'taken and seized from their enemies and opponents in their wars'. We shall see later that these were put to death in a special way.

Orphans formed a class which furnished food for the gods. Some of these seem to have been taken into the houses of rich men to be brought up and later contributed by their patrons. Others may have been the offspring of deceased male relatives and slave women. Little time was lost in sacrificing a child after both parents were dead: 'They killed and sacrificed a girl named Ix Chable . . . daughter of Nahasio Chable and of his wife, natives of Sahcaba, already dead, and when they killed the said girl her mother had been dead five or six days.'

Among this category of victims may have been the offspring of deceased male relatives and slave women just mentioned. Palacio (1576) gives a vivid description of the sacrifice of a boy among the Pipil in Guatemala and also of '*bastardos nacidos entre ellos*'.

Landa records: ' . . . Some in their devotion gave their little children who were made much of, and feasted up to the day [of the festival], and they were well guarded, so that they should not run away or pollute themselves with any carnal sin. And in the meanwhile they led them from town to town dancing, while the priests, *chilans*, and other officers fasted. And when the day arrived, they all came together in the court of the temple. . . .'

Herrera tells us that when slaves were lacking, 'they were so devout that they gave their little nephews and even their sons'.

Children were donated by pious men and also presented by one *cacique* to another: 'And the same Lorenzo Iuit told the other *caciques* that the *cacique* of Cansahcab, who is called Francisco Chel, had sent these girls, whom they said were from Cah which is their name for the province of Izamal, because such was the custom in ancient times that some *caciques* sent boys and girls as presents to other *caciques* for sacrifice, which was formerly called *quymchick* (*cim cich*).'

Certain writers have assumed that the girls who were sacrificed in the Cenote were all virgins. The worst offenders in this interpretation were the Englishmen Arnold and Frost (1909), who claimed, quite incorrectly, that all the skulls recovered were those of young females from twelve to sixteen. They add: '[They were] hurled by the priests into the chasm, possibly after defilement by the high priests in the small building at the pool's edge, thus symbolizing the simultaneous surrender of virginity and life to the Rain Deity.' At the time these statements were made regarding the status and treatment of the girls thrown into the Cenote, there was little basis for attempting to establish either their virginity or pre-sacrificial defilement. Now that the Spanish text of the *Relación* of Lopez is available, we find he uses the term *doncellas* to describe Indian women who were sacrificed, and he notes, 'And they placed her in a shrine which was near there, where the priests withdrew with her.' Here, perhaps, is a late justification for Arnold and Frost's statement made in 1909. In the testimony collected at Sotuta and Homun regarding human sacrifice the victims are usually called *muchachos* and *muchachas*. Sometimes the girls are called *niñas*. In a few places their names are given in full and preceding each name is the Maya feminine prefix *ix*.

All the skeletal material recovered from the Cenote has been

studied by Hooton, whose report is significant in view of the above statements. He writes:

Certainly, or almost certainly, thirteen of the skulls, belonged to adult males, and four of the six pelvises represented the same sex. The males ranged in age from sub-adult (eighteen to twenty-one years) to old (fifty-five years and over). Only one of the females was middle-aged (thirty-five to fifty-four years); of the other seven, six were young adults (twenty-one to thirty-four years) and the other a sub-adult (eighteen to twenty). There are seven skulls of children between ten and twelve years. Of the fourteen skulls of younger children, nine were estimated to have been aged four to six years, one six to eight years, one three to four years, one eighteen months. The other two were represented only by fragments.

In so very short a series as twenty-one adults, there is no statistical value. However, of the twenty-one adults, sixty-two per cent were male and thirty-eight per cent female. As Hooton remarks, 'All of the individuals involved (or rather immersed) may have been virgins but the osteological evidence does not permit a determination of this nice point.'

Of the many references to the sacrifice of virgins in other regions, we note the account by Cortés of the people of Teutiercas in Acalan dedicating their principal temple presumably to the goddess Ix Chel. In her 'they had much faith and hope'. In her honour, 'they sacrificed only maidens who were virgins and very beautiful; and if they were not such, she became very angry with them'.

The Lopez *Relación* states that those who were compelled to be sacrificed were 'captives and men taken in the wars'. In a *Relación* dated 1579 we read of a Cupul, lord of Ekbalam, who had a war with a *pueblo* called Yalcoba and 'those whom they captured remained slaves and the others they sacrificed to their idols'. There seems to have been some class distinction in those captured, as Landa notes: 'If they made a prisoner of some distinguished man, they sacrificed him immediately, not wishing to leave any one alive who might injure them afterwards. The rest of the people remained captive in the power of those who had taken them.' Here one might assume the sacrifice was for policy rather than for religious purposes, but in the Chi Manuscript we read, 'Those who were captured in war . . . if they were men of rank, [they sacrificed them to the idols, although some of them] were ransomed.' Less distin-

guished captives were held as slaves, and Cogolludo adds that such slaves were very severely treated.

Another point of view regarding the social significance of the prisoner is brought out in a passage from Herrera: 'Their greatest desire was to seize important men to sacrifice, because the greater the quality of the victim, the more acceptable the service they did to the god seemed to them.'

One of the many descriptions of the ill-fated outcome of the Valdivia Expedition of 1511 is that given by Cervantes de Salazar in 1560. We read of the Spaniards under Valdivia, wrecked on the north-east coast of Yucatan, and captured by a cruel lord of the country who offered Valdivia and four others to his idols, afterwards eating them, 'making a feast' according to the custom of the country. Geronimo de Aguilar, Gonzalo Guerrero, and a few others remained in a coop in order that, for another festival that was approaching, being fatter, we might solemnize their banquet with our flesh'. Aguilar and Guerrero escaped, the former eventually to join Cortés, while Guerrero, refusing this opportunity, 'went native', serving faithfully one of the lords of the country and helping him in resisting the Spaniards and native enemies. After one of their victorious encounters with another band of Maya, 'they took many *principales* prisoners, whom they afterwards sacrificed'.

We have already seen in Landa's description of the attempted Xiu pilgrimage that they 'brought them [the idols], slaves of both sexes to throw them into the well of Chichen Itza'. . . .

There seems no doubt but that the one to be offered to the gods was usually stripped of his clothes and anointed with a blue colour. It seems clear that blue is the colour of sacrifice and associated both with the priests and with the persons and objects offered to the gods. Both the *nacom*, the sacrificer, and the *chaac*, who hold the victim, appear with bluish-black bodies in the representation of the rite on the fresco in the Temple of the Warriors at Chichen.

We continue with Landa's description of the dress of the martyr. They 'put a *coroza* on his head'. In another place this is described as of feathers and seems to refer to a head-dress, a pointed cap, or mitre. The priest also 'wore a sort of *coroza*', as we have seen. The same term is used to refer to 'a coronet worn as a mark of infamy' and was imposed by the Catholic priests on the natives as a kind of punishment and mark of

infidelity to the new religion. In the testimony in the trial of the idolaters the victim of sacrifice is described as having his hands tied behind his back, as 'without a shirt, wearing breeches, his eyes covered with a white cloth'.

In four places, Landa speaks of a ceremonial progress along a road that had 'been cleaned and adorned with arches and greens'; 'by a path which was very clean and ornamented, they went all together with their accustomed devotion'. . . .

We are fortunate in having an account of the actual procession over the causeway to the Cenote. From the court in front of the Castillo, according to Lopez, the priests 'went in procession with her [the victim] by a paved causeway, all of slabs, which came to an end at a large and deep Cenote which was there'. Accompanying the priests with their elaborate raiment and those to be sacrificed, there were undoubtedly musicians, singers, and dancers. The bas-reliefs at Chichen, even with little colour left, give some idea of the splendour of the ancient processions.

On arrival at the platform beside the well, there must have been some ritual at the very edge of the well in the little temple or shrine there. Lopez says: 'And they placed her in a shrine which was near there, where the priests withdrew with her. And they instructed her and informed her concerning what she was to ask there from their demons and false gods. . . .'

As the final act before the victim was actually thrown into the well there seems, in some cases at least, to have been a homily directed to the one to be sacrificed. In the Sotuta testimony it states: 'Diego Pech, *cacique*, said to the one whom they wished to kill who was weeping, "Take courage and console yourself since we are not doing you harm now nor are we casting you into a bad region nor into hell but into heaven and glory in the manner of our ancestors who were accustomed to do so."'

THE SOUTH SEAS



THOR HEYERDAHL

EASTER ISLAND

(FROM AKU-AKU. George Allen & Unwin, 1958)

On Easter Day in 1722, the Dutch explorer Roggeveen discovered a remote island in the South Pacific. He was received by a strange people many of whom were stark naked and tattooed, and he noted that the ears of a few were artificially lengthened because of ornamental discs inserted through the lobes. They were a wild but friendly people living in the stone age—and all round them the Island was populated, too, with great stone statues gazing enigmatically across the land. Later, the Spaniards, then Cook, and still later La Pérouse visited this loneliest inhabited place and all were agreed that the stone giants belonged to an earlier period. But who carved the statues, who transported them, who erected them?

Dr. Thor Heyerdahl, the Norwegian explorer and anthropologist, has always been interested in the origins of culture in the Pacific. His Kon Tiki expedition made him world-famous, and subsequently in 1955-6 he visited Easter Island in an attempt to unravel the mystery. From the Islanders he learnt something of their traditions and their legends, and from the soil he gained evidence to confirm their stories. Long ago, they told him, there were two groups of peoples who lived on the Island, those with ornamental discs in their ears, known as the *long-ears* and those with normal ears, known as the *short-ears*. The *long-ears* were the rulers, and for centuries they dominated the *short-ears* and organized them in their ways of life, and between them they peopled the Island with the stone giants. But a day came when the *short-ears* revolted, and the *long-ears* fled to a peninsula which was defended by a ditch and into which they hurled firewood, so that when the attack should come they would be protected by a wall of flame. Eventually they were overcome by treachery and most of them perished in the blazing fires of their own defensive ditch. Only one survived the holocaust, and, 'I,' said the twentieth-century mayor of Easter Island to Dr. Heyerdahl, 'I am one of the descendants of Oro-roina, the sole survivor of that massacre.' And from that moment of long ago, the *short-ears* forgot the statues and the

ways of life imposed upon them by the *long-ears*, and they deserted the crater quarry which was the birthplace of the stone giants.

When Dr. Heyerdahl's archæologists cut trenches along the length of the defensive ditch by the peninsula, they discovered, at a certain depth, layer upon layer of ash, which can now be dated to approximately three hundred years ago—perhaps here is the answer to the riddle, perhaps here are the remains of the fires that consumed the Easter Island artists.

In the following extract Dr. Heyerdahl describes the quarry and the statues and the strangeness of Easter Island.

ANYONE who is dreaming of a trip to the moon can get a little foretaste of it by climbing about on the dead volcanic cones of Easter Island. Not only has he completely forsaken our own hectic world, which seems to be immeasurably far away in the blue, but the landscape can easily give an illusion of being on the moon: a friendly little moon hung between sky and sea, where grass and ferns cover the treeless craters which lie gaping sleepily towards the sky, ancient and moss-covered, lacking the tongues and teeth of their fiery days. There are a number of these peaceful volcanoes here and there in green hummocks all over the island. They are green outside and green within. The time of eruptions is past and so remote that at the bottom of some of the largest craters sky-blue lakes with waving green reeds mirror clouds flying before the trade wind. One of these waterlogged volcanoes is called Rano Raraku, and it is here that the men in the moon seem to have been most busily at work. You do not see them, but you have a feeling that they have only hidden themselves away in sealed-up holes in the ground, while you yourself walk about in the grass at your ease and survey their interrupted tasks. They have fled in haste from what they were doing, and Rano Raraku remains one of the greatest and most curious monuments of mankind, a monument to the great lost unknown behind us, a warning of the transience of man and civilization. The whole mountain massif has been reshaped, the volcano has been greedily cut up as if it were pastry, although sparks fly when a steel axe is driven against the rock to test its strength. Hundreds of thousands of cubic feet of rock have been cut out and tens of thousands of tons of stone carried away.

And in the midst of the mountain's gaping wound lie more than a hundred and fifty gigantic stone men, finished and unfinished, in all stages, from the just begun to the just completed. At the foot of the mountain stand finished stone men, side by side like a supernatural army, and one feels miserably small in approaching the place, whether on horseback or driving in a jeep along the ancient roads, which the vanished sculptors laid down, leading to their gigantic workshop.

Dismounting from one's horse in the shadow of a great block of stone, one sees that the block has features on its underside: it is the head of a fallen giant. The whole expedition could creep under it and find shelter in a rainstorm. On going up to the foremost figures, which are buried in the earth up to their chests, one is shocked to find that one cannot even reach up to the colossus' chin. And if you try to climb up on to those which have been flung down flat on their backs, you feel a regular Lilliputian, because often you have the greatest difficulty even in getting up on to their stomachs. And once up on the prostrate Goliath you can walk about freely on his chest and stomach, or stretch yourself out on his nose, which often is as long as an ordinary bed. Thirty feet was no uncommon length for these figures: the largest, which lay unfinished and aslant on the side of the volcano, was sixty-nine feet long, so that, counting a storey as ten feet, this stone man was as tall as a seven-storey house. That was a burly giant, a regular mountain troll.

In Rano Raraku you feel the mystery of Easter Island at close quarters. The air is laden with mystery; bent on you is the silent gaze of a hundred and fifty eyeless faces. The huge standing figures look down at you with an enigmatic stare: your steps are watched from every single ledge and cave in the mountain, where giants unborn and giants dead and broken lie as in mangers and on sick-beds, lifeless and helpless because the intelligent creative force has left them. Nothing moves except for the drifting clouds above you. It was so when the sculptors went, and so it will always be. The oldest figures, those which were completed, stand there proud, arrogant, and tight-lipped; as though defiantly conscious that no chisel, no atomic power will ever open their mouths and make them speak.

But even though the giants' mouths were sealed seven times over, anyone going about in the chaos of uncompleted

figures up the mountain slope could learn a good deal. Wherever we climbed and wherever we halted, we were surrounded, as in a hall of mirrors, by enormous faces circling about us, seen from in front, in profile and at every angle. All were astonishingly alike. All had the same stoical expression and the most peculiar long ears. We had them above us, beneath us, and on both sides. We clambered over noses and chins and trod on mouths and gigantic fists, while huge bodies lay leaning over us on the ledges higher up. As our eyes gradually became trained to distinguish art from nature, we perceived that the whole mountain was one single swarm of bodies and heads, right from the foot up to the very top of the precipice on the uppermost edge of the volcano. Even up here, five hundred feet above the plain, half-finished giants lay side by side staring up into the firmament, in which only the hawks were sailing. But the swarm of stone phantoms did not stop even up here on the topmost edge, they went on side by side and over one another in one unbroken procession down the side of the crater into the interior of the volcano. The cavalcades of stiff hard-bitten stone men, standing and lying, finished and unfinished, went right down to the lush green reed-bed on the margin of the lake, like a people of robots petrified by thirst in a blind search for the water of life.

We were all equally overwhelmed and impressed by the gigantic enterprise which had once been interrupted in Rano Raraku. . . .

When we began to dig the impression was no less astonishing. The famous Easter Island heads were large enough already, standing on the slope at the foot of the volcano, but when we dug our way down along the throat the chest appeared, and under the chest the stomach and arms continued, and the whole of the huge body right down to the hips, where long thin fingers with enormous curved nails met under a protruding belly. Now and then we found both human bones and remains of fires in the strata of earth down the front of the statue. The heads looked quite different standing there with bodies and arms beneath, instead of as head hunters' trophies, as we are accustomed to see the Easter Island statues in encyclopædias and travel books. But this uncovering solved none of the problems of Easter Island; it was merely a fascinating sight which the Routledge expedition once experienced before us. We had the greatest difficulty in throwing a line over the highest heads,

and only the best climbers attempted to struggle up the rope, for when these statues were completely excavated some of them stood as much as forty feet high, or as high as a four-storey house. The last bit, from the eyebrows upwards, was the worst, for here the rope was pressed tight against the giant's forehead and did not afford a decent grip.

It was difficult enough for a rope-climber without encumbrances to ascend the skull of one of these standing giants, but it was more difficult to understand how it was possible to carry up a large hat which was to be placed on the very top of the head, especially considering that the hat too was of stone, and could have a volume of two hundred cubic feet, and weigh as much as two elephants. How can one lift the weight of two elephants to the level of the roof of a four-storey house, when there are no cranes and not even a high point in the neighbourhood? The few men who could find room for themselves up on the figure's skull could not possibly have dragged an enormous stone hat up to the small flat space which was their only foothold. And although a crowd of men could stand on the ground at the foot of the statue they were mere Lilliputians, who could not stretch their arms more than a fraction of the way up the lower part of the giant. How then could they have pushed the weight of the two elephants high in the air, right up past the chest, and on past the towering head up to the very top of the skull? Metal was unknown, and the island was practically treeless.

Even the engineers shook their heads resignedly. We felt like a crowd of schoolboys standing helpless before a practical conundrum. The invisible moon-dwellers down in their holes seemed to be triumphing over us, asking: 'Guess how this engineering work was done! Guess how we moved these gigantic figures down the steep walls of the volcano and carried them over the hills to any place in the island we liked!'

There was little use in guessing. We must first have a really good look round, to see if the mysterious old-time genii had been careless enough to leave behind something which could give us even the smallest hint.

To tackle the problem at its root we first studied the numerous uncompleted figures which lay on the ledges in the quarry itself. It was clear that all the work had been broken off suddenly; thousands of primitive unpolished stone picks still lay in the open-air workshop, and as different groups of sculptors

had worked simultaneously on many different statues, all stages of carving were represented. The ancient stone-cutters had first attacked the bare rock itself and made the face and front part of the statue. Then they had cut alley-ways along the sides and made giant ears and arms, always with extremely long and slender fingers, curved over the belly. Next they had cut their way underneath the whole figure from both sides, so that the back took the shape of a boat with a narrow keel attached to the rock.

When the façade of the figure was complete in every minute detail it was scrubbed and thoroughly polished: the only thing they took care not to do was to mark in the eye itself under the overhanging brows. For the present the giant was to be blind. Then the keel was hacked away under the back, while the colossus was wedged up with stones to prevent it from slipping away and sliding down into the abyss. It was a matter of utter indifference to the sculptors whether they carved the figure out of a perpendicular wall or a horizontal slab, and head upwards or downwards, for the half-finished giants lay all over the place and leaning in every direction, as on a battle-field; the only thing that was consistent about them was that the back was the last part to remain attached to the rock.

When the back also had been cut loose the break-neck transportation down the cliff to the foot of the volcano had begun. In some cases colossi weighing many tons had been swung down a perpendicular wall and manœuvred over statues on which work was still proceeding on the ledge below. Many were broken in transport, but the overwhelming majority had come down complete—that is to say complete but for legs, for every single statue ended in a flat foundation just where the abdomen ends and the legs begin. They were sort of lengthened busts with complete torsos.

At the foot of the cliff lay a thick layer of gravel and decomposed rock, often piled up into ridges and regular hillocks. This was the result of thousands of tons of stone splinters which had been carried away from the quarry by the sculptors. Here the giant men had been temporarily raised up into a standing position in holes which had been dug in the rubble. Not till now, with the statues standing thus, did the sculptors set to work on the unfinished back, and the neck and hinder parts take shape, while the waist was decorated with a belt

surrounded by rings and symbols. This little belt was the only piece of clothing the naked statues wore, and with one exception they were all men.

But the mysterious progress of the stone colossi did not end here among the rubble. When the back also was finished they were to go on to their wall-less temples. Most of them had gone already: only comparatively few were still on the waiting list for transportation from their holes at the foot of the volcano. All the fully completed giants had moved on, mile by mile over the whole island: some had finished their journey up to ten miles from the quarry where they had first taken human shape, and the very smallest weighed from two to ten tons apiece.

Father Sebastian (a missionary on the Island) acted as an outdoor museum director in this deserted lunar landscape. He had climbed about everywhere and painted a number on all the statues he could find, and there were over six hundred in all. All were of the same greyish-yellow black-grained stone: all had been hewn in the same gigantic workshop in the steep face of Rano Raraku. It was only there that this special colouring of the rock was found, and knowing this one could recognize a statue simply by its colour even if it was lying prostrate among other huge boulders a long way off.

The strangest thing was that the colossi had been carried about not as shapeless lumps which could stand a knock or two, but as perfectly smooth human forms, scrubbed and polished front and back, from the lobes of their ears to the roots of their nails. Only the eye-sockets were still lacking. How had it been possible to move the complete finished article across country without rubbing it to pieces? Nobody knew.

At their destination the blind stone men were not erected just by dropping them down into a hole: on the contrary, they were lifted up in the air and placed on the top of an *ahu*, or temple platform, where they remained standing with their base a couple of yards above the ground. Now at last holes were chiselled for the eyes; now at last the giants might see where in the world they were. And then came the top of the macaroon cake. Now they were to have 'hats' put on the tops of their heads—'hats' which weighed from two to ten tons and in the latter case could tip the balance against two elephants.

Actually, it is not quite correct to talk about 'hats', even though everyone does so nowadays. The old native name for this gigantic head decoration is *pukao*, which means 'topknot',

the usual coiffure worn by male natives on Easter Island at the time of its discovery. Why did the old masters lift this *pukao* up on top of the giant in the form of an extra block? Why could they not simply cut it out of the same stone with the rest of the figure? Because the important detail was the *colour* of the topknot. They went to the opposite end of the island, seven miles from the stone quarry in Rano Raraku, and there they had hewn their way down into a little overgrown crater where the rock was of a very special red colour. It was this special red stone they wanted for the statues' hair. So they had dragged yellowish-grey statues from one side of the island and red topknots from the other, and had placed one upon the other on top of more than fifty raised temple platforms all round the coast. Most of these platforms had a couple of statues side by side, a great many had four, five or six, and one had no fewer than fifteen red-haired giants standing side by side, with their base twelve feet above the ground.

Not one of these red-haired giants stands in his old place on top of the temple platforms to-day. Even Captain Cook, and probably Roggeveen also, arrived too late to see them all standing in their old places. But our first explorers were at any rate able to testify that many of the statues were still standing at their posts with red *pukaos* on their heads. In the middle of the last century the last giant crashed down from his temple, and the red topknot rolled like a blood-stained steam roller over the pavement of the temple square. To-day only the blind hairless statues in the rubble-filled holes at the foot of the volcano still stand with heads raised defiantly. They stand so deep in the earth that no native enemy has succeeded in pulling them down, and a single attempt to cut off one of the heads with an axe was totally unsuccessful because the ancient executioner had not managed to cut his way more than a hand's breadth into the giant neck.

The last statue to fall was dragged down from its *ahu* about 1840 on the occasion of a cannibal feast in a cave near by. It had a topknot two hundred cubic feet in size on the top of its thirty-two-foot tall body, which in turn stood on a wall almost the height of a man. We have all the measurements and also the density of this fallen giant; it weighed fifty tons and was transported two and a half miles from the quarry in Rano Raraku. Let us imagine ourselves taking a ten-ton railway truck and turning it upside down, for the wheel was unknown in

Polynesia. Next we capsize another railway truck alongside the first one, and tie the two firmly together. Then we drive twelve full-grown horses into the trucks, and after them five large elephants. Now we have got our fifty tons and can begin to pull, and we have not merely to move this weight, but drag it for two and a half miles over stony ground without the slightest injury being done to it. Is this impossible without machinery? If so, the oldest inhabitants of Easter Island mastered the impossible. One thing is certain: this was not the work of a canoe-load of Polynesian wood-carvers, who set to work on the bare rock faces when they landed, merely because they could find no trees to whittle. The red-haired giants with the classical features were made by seafarers who came from a land with generations of experience in manœuvring monoliths.

Now that we have got our fifty-ton load to the right place, the four-storey stone man must be got up on to a wall and made to stand upright, and then the topknot has to be put on: it alone weighs in this case ten tons, and has been carried seven miles as the crow flies from the topknot quarry. Seven miles is a long way in country like this, and thirty-two feet in excess of the stone platform is a good height anywhere when the object to be lifted weighs ten tons, as much as twenty-four full-grown horses. But it was done. And the whole thing was pulled down again in 1840 by cannibals, who undermined the foundation stones in the wall and celebrated their deed by eating thirty of their neighbours in a cave.

I stood on the top of the crater of Rano Raraku and had a magnificent view all round over the grass-clad island. Behind me there was a fairly steep slope down into the overgrown interior of the volcano, where the little sky-blue crater lake lay as clear as a mirror in a broad framework of the greenest reeds I ever saw. Perhaps it seemed a brighter green in contrast with the grass all over the island, which now, in the dry season, was beginning to turn yellow. In front of me there was a steep drop down the terraced wall of the quarry to the flat ground at the foot of the volcano, where the members of the expedition were working like ants, excavating the brown earth around the gigantic figures. Their horses stood tethered here and there, looking pitifully small alongside the burly giants. From here I had a good survey of what had happened in the past: this was the focal point and centre of Easter Island's most conspicuous problem. This was the statues' maternity home: I was standing

on a sturdy embryo myself, watching the swarms of others all down the descent both before and behind me. And on the slope at the mountain's foot, both outside and inside the crater, the new-born stood erect, blind and hairless, waiting in vain to be hauled away on their long transport.

From up here I could see the course the transport had taken. Two of the figures which were completed inside the crater had been on their way when all work suddenly ceased. One had just come up on to the edge of the crater on its way out, the other was already on its way down through a gully on the outside, when the transportation had suddenly stopped, and there they lay, not on their backs, but on their stomachs. Along the old stoneless grass tracks over the plain, as far as the eye could see, others lay singly and in irregular groups of two and three. They were blind and hairless, and all the indications were that they had never been set up where they lay, but had been abandoned just anywhere along the route, while being transported from Rano Raraku to the platforms that awaited them. Some had gone right away, beyond the hindmost hills and ridges. And there, beyond the horizon, far away to the west, lay the little volcano Puna Pao with the topknot quarry. I could not see it from where I stood, but I had been down into its blood-red interior and seen half a dozen topknots lying like giant stone cylinders down in the precipitous little crater, while the old master hairdressers had conveyed a number of the largest up over the steel slope. These now lay in a dump outside, waiting to be conveyed further. Others had evidently been abandoned while under way to their future owners, for here and there a solitary topknot lay on the plain. I measured the largest topknot which had been carried up out of the red crater. It was 650 cubic feet in size and weighed roughly thirty tons, or as much as seventy-five well-grown horses.

My own comprehension was insufficient to grasp this far-reaching Easter Island engineering scheme, and I turned resignedly to the native shepherd who stood by me in silence, gazing at the abandoned giants which lay about on the plain.

'Leonardo,' I said, 'you are a practical man, can you tell me how these stone giants could have been carried about in old times?'

'They went of themselves,' Leonardo replied.

PERU

VICTOR VON HAGEN

THE LOST ROADS OF THE INCA

(From *HIGHWAY OF THE SUN*. Victor Gollancz, 1956)

From Cuzco in Peru, the capital of the Inca Empire, the Royal Roads led out to the 'Four Quarters of the World'—and what a 'World' and Empire it was, embracing high Andean peaks and turbulent rivers, jungle, marsh, and desert. Over more than two thousand five hundred miles of beautiful but difficult country the Inca lords ruled supreme. Theirs was a civilization based on conquest and efficient organization: a conquest not only of neighbouring peoples but of a terrain. All this was possible because of the genius of their engineers who built a system of roads that knit the Empire together. The Inca highways scored the jungles, were supported on solid causeways across the marshes, were carried aloft along the mountain peaks, and spanned the raging rivers. But in the end this great Empire fell to the Spaniards in the first half of the sixteenth century.

In the following extract Mr. von Hagen describes how he and his team traced the old Inca roads, and how the Royal Road from Cuzco to Lima led them to the site of the Bridge of San Luis Rey.

IT was in 1548. At the side of a road which went on out across the bare Andes, a young soldier was keeping his vow to write down the 'wonderful things of these Indies'. Pedro Cieza de León looked again at the stone-paved highway he had followed for so many leagues and then he wrote:

Accordingly the Inca constructed the grandest road that there is in the world as well as the longest, for it extends from Cuzco to Quito and was connected from Cuzco to Chile—a distance of eight hundred leagues. I believe since the history of man, there has been no other account of such grandeur as is to be seen on this road which passes over deep valleys and lofty mountains, by snowy heights, over falls of water, through the living rock, and along the edges of tortuous torrents. In all these places, the road is well constructed, on the inclining mountains well terraced, through the living rock cut along the river-banks supported by retaining walls, in the snowy

heights built with steps and resting places, and along its entire length swept cleanly and cleared of debris—with post stations and storehouses and Temples of the Sun at appointed intervals along its length.

In the four hundred years since the young traveller wrote this, much of this grandeur has been laid waste by the insults of time; much is in ruins, many of the superbly made halting-places of the road reduced to formless mounds. Here and there, during the intervening centuries, explorer-archæologists have wandered over the empty spaces of Peru and have painstakingly pushed away the debris of time to ferret out some of the clues with which to reconstruct an empire. But between what is known and what is not known, between what we have learnt of the ancient cities along the road and what is still hidden, lies a great gap. We know only that the thread which bound the widely separated communities was the Road—that ubiquitous overwhelming Road—which Cieza de León described as the 'grandest and longest in the world'.

What then if this fabulous road were to be found and followed from end to end? What if one were to employ the techniques now available in the scientific fields of archæology and geography, and were to make use of advanced methods of travel such as the double-transmissioned truck and the aeroplane? Would it not then be possible to discover the route taken by its various subsidiary roads, and so make their heights and lowlands accessible to those who would search for the many forgotten cities? And if these were found might they not reveal the secret of how the Incas lived, how by building their amazing roads they were able to communicate with almost telegraphic speed with the most remote sections of their empire?

To travel this ancient route, seeking to find some light on the enigma of the history of Man in the Americas, was my dream. . . .

Once we had made the high pass at La Raya, we were out of the Lake Titicaca region and almost at once had dropped down into the warmer valley of Vilcanota, where the air was almost benign. We could well understand how the people who became the Incas abandoned their origin place around Titicaca to seek out the warmer climate of this valley.

For some days we followed the Inca road through pleasant villages not much changed since the time when their Inca

ruled the land, until we came to the great temple of Kontiki Virachoca. The temple was now in ruins but even so the fragments of high stone and adobe walls and rounded stone pillars spoke of the great architectural genius of the Inca. As we drove, the road was at times clearly revealed and then at other times so thoroughly erased that we could find no trace of it. At Chuqui-cahuana, for example, we found a length of well-preserved road, part of the Royal Road, measuring fifteen feet from wall to wall. On we went northward through hills now purple with the blossom of the potato, past the Lake Urcos which lay like an emerald at the bottom of cultivated hills.

Not far from this we came to ancient stone quarries at the gates, so to speak, of Cuzco. Here was an enormous passageway, with one of its sides faced with carefully fitted red stone, the mark of the Inca stone-mason. It was once, so we believed, a control station or sort of toll-gate, and the entrance to the road from the south which led through a large pre-Inca city into the immediate valley of Cuzco. From here northward this old Inca road more or less becomes a modern road.

On our way along this, which was once the Appian Way of the Incas, we passed multitudes of people in holiday attire, many of them driving gaily decorated llamas ahead of them, all going towards the Sacred City. Many wore their distinctive regional headgear—the women of Ayaviri their large flat hats trimmed with beautiful upending brocade; those from Sicuani woollen wimples which encased the head nunlike and fell across the shoulders. Groups of Indians trotted along hugging musical instruments, as if they would protect them from the dust of the fast-travelling cars. Some carried harps shaped like ancient rebecks, which they stroked as they walked; others had reed pipes on which they softly fluted.

The crowd increased as it converged in Cuzco. We made our way down the road and entered the square called Rimac-Pampa. This was once the exit place of the great road to the south, and was the Speaking Pampa where the people gathered to listen to the harangues of the Inca's officials. It was still *the* gathering-place, crowded now with auto buses and jostling people, noisy with the sound of raucous radios and loud-speakers.

We had arrived over the Royal Road at Cuzco, the capital of the Incas.

Hernando de Soto, so the chronicler said, came first upon Cuzco at sunset.

The sun's great rundle sinking with an enormous burst of reddened glory had lighted up the city so that even the poorer buildings took on a burnished golden look. As the retreating sun's rays touched the beaten gold plates that adorned its walls, the pyramided Sun Temple, towering over the lower buildings around it, gleamed as if it were cased in metal.

Cuzco lay in a protected hollow at the northern end of the valley. The hills were bare; no trees except the stunted *molle* grew here. On the northern higher slope of the city stood an enormous stone fortress, a structure so immense that at first sight de Soto and his companion doubted that any army could breach it. Narrow and long 'like a puma's tail', Cuzco was made up of narrow streets, its smaller buildings painted yellow and red, the larger buildings constructed of enormous, beautifully laid stonework. In the centre was a great square, larger than the Plaza of St. Mark's in Venice, which, because of the luminous atmosphere, seemed so near that a bolt from a cross-bow could have been shot into the centre.

Captain Hernando de Soto had good reason to study Cuzco intently. For in this fateful year of 1533, he was one of two hundred Spanish soldiers engaged under the command of Francisco Pizarro, the Spanish Captain General, in the conquest of an empire five times the size of Europe. De Soto was, according to his chronicler, 'a handsome man, dark in complexion, with full beard and dark restless eyes, of cheerful countenance, an endurer of hardships and very valiant'. At thirty-five, as a *conquistador* of Peru, he was in the full tide of his glory. Rather above middle height, graceful on foot and horseback, he rode in the Moorish style and looked well accoutred in buckler and helmet with a straight sword by his side. Now after his 450-mile ride over the Royal Road from Cajamarca to the south where the Inca King Atahualpa was being held for ransom, de Soto looked down on Cuzco in intent contemplation. He had consented to be escorted to the capital of the Incas, by a retinue of Indians with only one other soldier companion, Pedro de Barco, in order to speed the payment of the gold and silver ransom—and also so that he might get to know something of the size of this strange kingdom, of its roads and its defences, for the Spaniards had come not only to siphon off

a winnowing of Inca gold but to make conquest of the source of all of it.

Hernando de Soto's first sight of Cuzco filled him with amazement: 'Cuzco, grand and stately, must have been built by people of great intelligence. The city is certainly the richest of which we have any knowledge in all the Indies. . . . Neither gold nor silver, they tell me, can be taken out of here on the pain of death and there are many goldsmiths here and workers in silver.'

De Soto was received as a god. Carried through the city in a gold-plated litter and followed always by a curious throng of women and children, he saw the storehouses for wool tunics and cotton cloth, strange chambers filled with arms and accoutrements of war, such as quilted-cotton armour, sharp-edged swords, star-shaped halberds, while still more rooms were filled with corn and shellfish and seaweed—all in the form of tax tribute. He was careful to note, for he was primarily an officer making an 'estimate of the situation', the fact that out of the great square went 'four roads which led to all parts of the empire'.

Actually, these were the principal highways to the four divisions, the *suyus*, of the empire: the Chinchay-suyu road, over which de Soto had arrived, went north-west to Quito, five hundred leagues distant in what is now Ecuador; the Cuntu-suyul road to the coast stretched off to the south-west; the Collasuyu which, 'so the Indians sayeth', went to a great lake, began at the south-east corner; while the road to the jungles also began from the north-west, at a small plaza called the 'Salt Window', and was called the Anti-suyu road. The sum of these four divisions, the Inca Empire, was known as the Tawantin-suyu, the 'Four Quarters of the World'.

The people, so Hernando de Soto learned, had originated round Lake Titicaca as wanderers and food gatherers. Eventually they migrated northward. By the year 1000—since 'blood and cruelty is the foundation of all good things'—they had disposed of the original inhabitants of this valley and taken possession of the treeless land about Cuzco. Their food, their llama husbandry, their architecture, their ceramics, were Andean in pattern. Yet as these people were exposed to dearth and hunger and seasonal droughts, they began to oppose the titanic force of Nature and to attempt to alter it for their benefit.

The Incas made repeated conquests and organized the peoples they had defeated; they developed the formulæ that made an Andean empire possible, becoming a disciplined people, and, within the frame of their mountain glebe, over the centuries evolved into a unified empire. It expanded at the expense of its neighbours, absorbing the surrounding lands like an amœba. It enveloped them, digested them, and made them part of itself. What the Incas could not absorb, they killed. About A.D. 1200, the chieftains of the Quechua-speaking peoples announced their official descent from the Sun God. They called themselves 'Incas', and as such became the hereditary rulers of the Quechuas.

Under the aggressively active Inca policy of conquest and assimilation, the Inca realm expanded in all the four directions. Roads were built and a *chasqui* or courier system was organized. A caste of record-keepers, trained so that they could read the story of the past, invented the *quipu*—a series of coloured and knotted strings by means of which records could be kept of grazing lands, gold-mines, numbers of people and tribes, tributes and deposits.

Having grown great, the Incas had come to believe that it must always have been thus, and therefore what did not conform to the established idea of the Inca past was eliminated from human memory—and so well that the impression left was that before the Inca there had hovered a void over the Andes.

The Incas ruled their people with an iron, but a just hand. Every detail of their life, from womb to tomb, was prescribed. The state was not for the people nor was equality the ideal. It was rather a blending of tribal communism and theocracy, a perilously balanced fusion of two antagonistic systems.

The common people were manipulated like figures on a chessboard, becoming part of the decimal system of classification with division all along the social line. An elaborate hierarchy of territorial officials was set up. The highest under the Inca was the *Tuc-ri-cuo* (He-who-sees-all), the ruler of a division of ten thousand people. And so the categories went down the line to the least common multiple; for every ten thousand of the population there were 1,331 officials.

Everything was regulated in this welfare state. No one moved on the roads without permission; there was work-service for taxes; there were contributions to state and religion; and each man was automatically a member of an agrarian

militia. If a section of the realm was underpopulated, a whole tribe was moved into it. Loyal subjects were settled in a newly conquered land, while the recently conquered tribes were moved out and transferred to a 'safe' community where they could be absorbed. Under this policy, most of Andean America was conquered. From Chile to Colombia, a distance of 2,320 linear miles, the land was unified, the jungle was invaded, the desert coast pervaded. No tribe, no force, could resist the pressure of this benevolent despotism.

Of this realm Cuzco was the capital. Thoroughly cosmopolitan, the city was inhabited by symbolic groups from the four divisions of empire. Each section of the city was given over to a particular tribal group, each with its own attire, own head-dress. If they were *yuncas* of the coast, they went muffled like gipsies; the *collas* (koyas) wore caps shaped like a wooden pump-box; the *canas* wore another kind of cap of greater width; the *cañaris* had crowns of interwoven thick laths; the *hunancas* had short ropes attached to their hair which hung down to the chin. Cuzco was the microcosm of its empire.

There was only one way by which this community of people could have been held together, and that was by the communicating roads. All Indians were obliged to give one-third of their time to work-service, and while each tribal unit had to build and maintain the Royal Road running through its section, the direction and master plan were laid down by technicians sent out from Cuzco. These master architects charted the direction the roads would take, planned the way-stops and figured out the distances that the *chasqui* couriers would run and where their platforms would be set up. With these communications completed, nothing could occur in any place in the realm without the officials at Cuzco being made immediately aware of it. All this and much more did Hernando de Soto see and learn during his stay in Cuzco.

The summer of the dry season had come before he quit the city. In that time he gathered much gold, wrote his report, and prepared to move out. Cuzco was now gay with arriving Indians, for it was the season of the Sun Festival, the Intiraymi, celebrating the time when, as the Indians believed, the Sun God came down to live with them. From all sides Indians were pouring into the city to prepare for the pageantry of the Sun God. What must have been the thoughts of Hernando de Soto

when he turned on the hill of Karmenka and looked back on Cuzco! He, although he knew it not, was the last European to see it in its pagan state. Soon he was to gather his three hundred thousand gold pesos of loot, sail to Spain and eventually return to chase the twin phantoms, Youth and Gold—and lose both, along with his life, in the turbid waters of the Mississippi.

But on that bright June day of 1533, as this man of 'good impulses' rode beside his treasure-laden llamas along the high road back to Cajamarca, he moved out from this golden city through throngs of Indians coming to Cuzco for the festival of the Sun God.

Four hundred and twenty-one years after Hernando de Soto had left it, we, searching for the remains of those roads of an empire which he had so effectively helped to destroy, arrived in Cuzco.

The oldest continuously inhabited city in all the Americas—it dates back to about the time that the Battle of Hastings was fought—Cuzco shows little traces of its various epochs. There are the Inca walls—superbly fashioned of stone, laid with an instinctive feeling for the beauty of pattern in stone—which impart a feeling of the greatest antiquity. There too is the magnificent architecture of colonial Spain and in close proximity adobe houses which are without either dignity or grandeur. Between these contrasts is no evidence of growth. Cuzco is like a woman who when born is already old.

Hernando de Soto would have found little in this present-day observance of the Sun Festival to remind him of the city he saw before its rape, even though much of modern Cuzco is built upon the walls and foundations of the Incaic city. What had once been the Curicancha, the Shrine of the Garden of Gold, a structure whose walls were covered with gold as finely beaten as onion-skin paper, is now the Santo Domingo Convent. The sanctuary of the Sun Virgins, where chosen women were reared to care for the ritual of the Sun, is, ironically enough, the cloistered nunnery of Santa Catalina; and standing on the site of the Snake Temple, the palace of the last great Inca, is the Church of the Jesuits. Time, man, and earthquake have not been kind to Cuzco. Yet the Sun Festival was once again bringing the Indians back into their city, and the streets were enlivened by their gaudy finery.

Cuzco was, naturally, an important point for us. The four roads of the empire had gone off from the centre of the city, and around it were the remains of its most imposing structures. . . .

We began our further journey with a preliminary exploration along the north-western route, that same Chinchay-suyu which Hernando de Soto had taken when he finally left Cuzco and followed his loot-laden llamas.

Here the Inca road is still made daily use of by Indians arriving with their llamas. At the top of the hill, at Karmenka, there once stood Huaca-puncu, the 'Holy Gate', the first shrine an Indian found on his journey northward. 'One made sacrifices here,' wrote Cieza, 'so that the Inca road would not collapse or be destroyed.' We found beautifully cut stones taken from this shrine embedded in the Church of Santa Ana, which now occupies the former site of this sacred place that once guarded the Royal Road.

We leisurely followed the road northward. Tracing its course was a little like putting an anagram together. Located on the west side of the narrow valley, the old road crossed the modern highway at times and lost its identity. Then, where the highway curved to make a gradient, the Inca road would emerge again and could be followed, measured, and studied, until it entered the environs of a village, where it would again disappear. So with varying success we followed it until we came to the swamps.

Fifteen miles north of Cuzco lies a wide-spreading quagmire. The Incas in the fourteenth century built a long causeway across this, which is still used. More than a metre above the flooded lowland plains, twenty-four feet wide and eight miles long, it was one of the triumphs of Inca engineering. Traversed by all who entered or came from Cuzco, it has, through the centuries, often been described as: 'a great swamp which could only be crossed with difficulty, had the Inca not built a wide paved causeway . . . with walls on both sides so firm that they will last a long time'.

At the northern end of all this, we came to Zurite. Here on the sides of the mountain were the long parallel walls of agricultural terraces ascending the sides of the Andes like a gigantic flight of steps, and here we looked for Xaqui-Xahuana, the lost city of which all the *conquistadores* spoke, that place which one of the Inca Kings, referring to his

flight from the penetrating cold of Cuzco, had called 'my refuge'.

The village of Zurite dates only from 1570, the site having been given to one of the Spanish conquerors as his fief, and he had, as was then the practice, torn down the ancient buildings and utilized the stone. The modern market, used now by the Indians who still, in ancient dress, come down from the hills, is located in front of a large mouldering church. Since we could see that the church was constructed of the ancient stonework, we begged its sacristan to open the place for us. As he fumbled with the enormous lock, we were surrounded by hordes of boys shouting for the Peruvian equivalent of baksheesh. Once inside the church, the light from our torches revealed crumbling mud walls hung with huge canvases of paintings which had come from the eighteenth-century Indian ateliers of Cuzco and were in marked contrast to the moulding walls broken by nature's tremors and man's neglect. Nothing here gave us a clue to the ancient city we sought until we reached the richly wrought altar of chased silver fashioned in eighteenth-century baroque style. The date was 1770. Hanging here among the silver flowers and cherubs we found a likeness of the donor, El Cacique D. Juan Quayna-Sucnu, attired in flowing cape, knee breeches, and silver-buckled shoes. At one side was his younger son, wearing the long surcoat of the period. Facing him on the other side was his wife at prayer. Behind her stood another son. The legend above this read: DOÑA ISABEL ESTRADA CON SU HIJO ANDRES GUANA-SUCNU. The Quayna-Sucnu family, according to the sacristan, had been owners of the Zurite valley but time—and here he spread out his crippled hands to suggest the cupidity of man—had robbed them of it. Learning that their descendants still lived nearby, we crossed his wrinkled palm with a piece of silver and, following him out of the church and across fields planted in corn and wheat, came to a small house of sun-baked adobe. Dogs held us in check until an old man appeared at the door. Shading his eyes from the bright sun, he begged our business in a quavering voice.

Hearing it, he said, 'You stand on it—Xaqui-Xahuana'—and, somewhat puzzled as to why foreigners should come to ask about that which time had entombed, he led us up a hill trail along which we saw those characteristic stone walls, always the first evidence of former Inca occupation. From the top we looked down, and there before us were the ruins of the

'Lost City', built around a plaza where once large buildings fanned out to form a lunette. This former pleasure resort of Inca nobles had been the last stop before the wayfarer on the Royal Road crossed the Anta swamps over the giant stone causeway on the way to Cuzco. 'This valley,' our chroniclers had written, 'once contained sumptuous buildings for recreation to which the lords and many people from Cuzco came for their diversion,' and now we were looking at all that was left of these same 'sumptuous buildings'. While Silvia made a sketch map of the ruin, I found numerous pottery fragments, the finest we had seen in the Cuzco area.

These plains had seen much history. Here, early in their existence as a nation, the Incas were brought to the edge of defeat by the tribe called the Chancas. Finally victorious, the Incas had their enemies' bodies skinned and stuffed in such lifelike attitudes 'that the human form was made to appear in many positions. Some of them,' averred a Spaniard who saw them, 'had stomachs formed like drums on which they appeared to be playing; others were set up with flutes in their mouths.' The Incas had built a houselike tomb in which these horrid battle trophies were kept. There they remained for two hundred years, or until the Spaniards entered Cuzco.

Our old guide led us back to his house and there showed us some 'ancient things', Inca fragments of stone and vases, hand-wrought nails, Spanish coins which dated from the times of Charles V, a beautifully etched silver partisan, a cruel-tipped lance and a sword handle, a rusty, encrusted sword blade; and then, most curious of all, a silver ornament with a unicorn's head crudely stencilled on it, which bore a bit of sixteenth-century Spanish doggerel, ending with: 'And this belongs to Francisco de Carbajal.'

Those who have read the *Conquest of Peru* will recall that witty cut-throat, Francisco de Carbajal, who, when close to eighty years of age, had come to Peru to become Gonzalo Pizarro's Captain General during his bid for the empire of Peru. Our old man had found this memento while ploughing the same battlefield on which, in 1548, Carbajal had met his death. 'Never was Marius or any Roman general Carbajal's equal in cruelty, for in every phase . . . he showed himself a past master; the trees wherefrom he hung his victims, from Quito to Potosí, bear witness to it.'

It was during the civil war which was fought all over the Andes between the Spanish forces that Carbajal peopled the trees with bodies of his enemies and so earned the sobriquet 'Demon of the Andes'. At the end, Carbajal led his men out to Xaqui-Xahuana to do battle with the Viceroy's. Before the battle was joined Carbajal's men began to desert, and before he himself could take to his heels, he was captured by his own troops, who hoped, with such a prize, to make their peace with the victors. He was roundly abused when the party reached the Viceroy's camp; the soldiers would have had his head had another officer not stayed their hands.

'To whom,' said Carbajal in haughty jest, 'am I indebted for this protection?'

'Do you not know me?' asked his would-be protector. 'You have pursued me for five thousand leagues through the Andes all these years.'

'I crave your pardon,' retorted Carbajal. 'It is so long since I have seen anything but your fleeing ass that I have fully forgotten your face.'

On his eighty-fourth birthday Carbajal was led out to be beheaded. His executioner, a tailor, had been instructed to quarter his body. 'Treat me, dear little brother,' Carbajal said, 'as one tailor would to the other.'

Shortly the four pieces of the body that had been Carbajal were hung in chains at the four entrances of the Royal Roads into Cuzco. . . .

The Apurimac had been the Rubicon of the Incas. For centuries it held their northward conquests in check; but once their technology advanced to the point where they could bridge it, they hung a suspension bridge, the greatest in all Peru, across it. Immediately they pushed their empire northward at a fearful pace.

It was known as '*the Bridge*', and in the minds of the early Spaniards, it was co-extensive with Peru itself. For the early Spaniards, the crossing of it filled them with fright and terror. Records and letters are filled with their complaints of how the bridge swung in the heavy wind, how deep was the dark abyss, how terrifying the thunder of the roar of the water as the sounds ricocheted against the vertical rock-walls; how their pulses raced, their eyes grew dim and their hearts faint as they hung on to the rope-cables and made a traverse of it. 'It is,' said one

conquistador, 'no small terror that is caused by seeing what men must pass through in these indies.'

The longest continuously used bridge in the Americas, millions of people crossed over it during the five hundred years of its existence. Inca armies of conquest flowed over it; gold for the ransom of Atahualpa made its one-way passage across it; Spanish knights fought their civil wars over and around it; and for three centuries colonists used it while moving on the King's business. Even in the days of the South American republics this bridge was the only way of crossing the 'Great Speaker' (the roaring Apurimac). Yet it would have been forever forgotten had it not been for two Americans; in 1864 George Squier stopped long enough in his journey through the region to give it, by means of the only authentic illustration ever made of it, a detailed and accurate description; and in 1927 another American, Thornton Wilder, immortalized it in *The Bridge of San Luis Rey*.

David Samenez had insisted on accompanying us out to the bridge site. He was after all, he reminded us with much jesting, the owner of the Bridge of San Luis Rey. Moreover, he had been born at the hacienda of Bellavista, close to where the ancient road made its descent to the bridge.

This hacienda, which drew its water from the weeping glaciers of Soray thirty miles distant, lay on a flat table-land overlooking the gorge of the river. It had been developed by David's father, a man who did not allow his gentle birth to prevent him from working with his hands, an eccentricity which in the last century in Peru was considered a social crime. He had built up his hacienda, had fought against a dictator, holding off a large contingent of troops near to the site of the old bridge, and in 1935 had served his country briefly as President of Peru. All this we had learned as, mounted on our borrowed horses, we made our way over the highway.

The mountains were beautiful that day—Salcantay, its hoary head unbelievably high in the cobalt blue of the sky, accompanied as it were in the heavens by Mount Huamantay with its five thousand feet of glistening snow. An undulating greensward planted with lucerne lined the ancient highway, whose road bed here had been destroyed by the passing caravans of four centuries.

We moved on beyond to where the earth yawned out widely and there began the ride downward. It took us some hours to

get to La Blanca, once a way stop on the descent of the Inca road toward the canyon which led to the great bridge. But from La Blanca we could go no further. The landslides caused by the rampaging Apurimac had destroyed the rock walls of the canyon. The careful stone terracing of the Incas, erected as long ago as 1390, still hung in sections over the abyss, yet there was no longer any way of getting down. Our binoculars, following David's pointing finger, picked out far below the stone steps that led to the bridge ramparts. All else was obscured. To reach the bridge, we should have to cross to the other side of the river and approach it from its northern side.

On our way back we watched the setting sun painting the snow-capped mountains with radiant rainbow colours, and David pointed out to us the snow-covered Yanacocha fifteen miles away. Even as he did so, my powerful binoculars picked up another river plunging down the precipitous slopes to join the Apurimac. About midway between the glacier and the river were the ruins of Choque-quirao, the only extensive Inca ruins known in this part of the Vilcabamba Range. They could be reached, he said, in a two days' walk from the village of Inca-huasi. Did David know, I questioned, if the road led to Vilcabamba? (the last fortress of the Incas, still lost in the mountains).

My great-uncle was one of the first to visit the ruins of Choque-quirao. He kept a journal which I have in the house. He once travelled beyond these ruins and he insisted that those roads led to Vilcabamba, in just the region which you pointed out to me on the map.'

We knew this to be true, for when Hiram Bingham found his way to the ruins in 1912, he had seen written on the walls the name of JOSÉ BENIGNO SAMENEZ 1861. One day, I knew, we should have another try at this fabulous Vilcabamba, but to go now would be to upset our carefully planned schedule. I felt at this moment like an earthy Pangloss, always interrupting our wishful thinking with, 'Let us cultivate our garden.' But if we could not now go to Vilcabamba, we could at least visit and inspect all that was left of the Bridge of San Luis Rey.

We began early in the day, so as to avoid the excessive heat. Before the peaks were lighted by the ascending sun, we gathered our gear and Indians together, and were driven to the left bank on the north-west side of the Apurimac. Here we began the 1,500-foot descent into the gorge. Encumbered as we were

with cameras and guide-ropes, our descent between the stands of fiercely spined cactus over loose gravel-sand was a little like the performance of a slow-paced slalom. The heat at the bottom, even in the morning, was furnace-hot, and the cactus and sharp-spined acacia accented the desertlike look of the place. As we walked along, heat waves danced before our eyes like St. Elmo's fire, and to add to our discomfort the flies gave us no rest, flying round us in clouds and biting viciously.

In this September month we found the Apurimac at its dryest, the land slashed with canyons like the wadis of Africa. The dryness was only a temporary state, for the shallow rivulets could rise with callous ease and within a fierce day of rain be raging torrents. The sides of the gorge were a horrible sandstone desolation cloven down in giant cuts, while below was a wide waste landscape. The gorge itself rose abruptly to the *puna* and higher above us, almost as a mirage, were snow-covered mountains.

We were not alone in feeling the heat. Our Indians felt it too. I remembered reading in some history how the 'Inca took the Indians from the coastal desert of Nasca to transfer them to the River Apurimac; because that river, where the royal highway goes from Cuzco to Lima, passes through a region so hot that the upland Indians . . . cannot live in its heat.' So the Inca, bearing this in mind, took Indians from the coastal regions to settle in these hot regions even though the River Apurimac has only a small place to settle, for, passing through high and rugged mountains, it has very little useful land, and yet the Inca would not have this little bit go to waste but wished it to be used for gardens so as to be able to enjoy at least the abundant good fruit which is raised on the banks of that famous river.' But whatever orchards had been there had long since been destroyed by time, and by the high bourne of this river, a headwater of the Amazon, which had its source a hundred miles south-west in the barren mountains of Chumbivilca.

The small biting flies were at their worst when late in the morning we came to the vertical rock walls that once sustained the bridge. At this point the Apurimac cuts into a gorge of solid rock walls which rise straight and sheer to considerable height. Confined to a narrow channel, the river roars its disapproval in such deafening tones that we had to communicate by hand signals.

A tunnel through which the road ran lay above us some thousand feet on the side of the limestone cliff. Henrik notched up his rucksack, played out the rope and started the climb. He found a narrow ledge and secured himself. Dick Lawrence followed, holding fast to his camera. Next went David and Charles, then Silvia and last, myself. The Indians found their own way. I could see Henrik far up edging toward an overhanging rock that jutted out above the river. It was a slow process. Perspiration pouring down my face attracted the insects and the flies which, since my hands were well occupied, I had no option but to endure. By the time I reached a spot where I could rest and wipe my face, blood freely mingled with the sweat.

One of the most dangerous aspects of the operation was the crumbling stone. A projection which we supposed strong enough to use as a belay turned out under the pull of our ropes to be virtually as shifty as beach sand. Dick Lawrence, who had taken the greater punishment since he would not relinquish either his tripod or camera to anyone, was having trouble overhead. There had been a steady rain of sandstone and now and again a sharp curse, but as I could see little, I was unaware until later how dangerous some of those moments had been. Henrik led us very expertly up and over to the section of the precipice from which the bridge once hung suspended.

We were now standing on what had once been one of the most important of the Inca roads. The celebrated tunnels were ahead of us and from this vantage place we could see now, and for the first time, the place of the bridge. The Inca road coming out of Mollepara, the last *tampu* station on the Cuzco side, had been run over the high-placed *pampa* to Bellavista near to the edge of the gorge. From that point it had zigzagged down the artificially terraced canyon to the valley 1,500 feet below. It had then followed the valley to the gorge, where mounting steps had been cut into the walls of an obelisk-shaped pinnacle. This had been reached by a narrow, inclined path, once ingeniously built with retaining walls; and from there the road mounted to a platform cut into rock. The thick suspension cables of the bridge on the Cuzco side had been fastened deep down in the floor of the platform. The cables, suspended from two stone towers, were then carried to the other side where, we were to find later, there was a similar natural platform. From

the platform on our side of the river, the road twisted upward until it came to the cliffs which, because they were of extremely friable sandstone, could not be surmounted. Faced with this geological fact, the Inca engineers tunnelled through them. The tunnel near which we were now standing was about two hundred yards long and inclined upward as it turned with the cliff. From here the road climbed to the heights of the naked 'idol mountain' and then, adapting itself to the topography of the land, it went north to the next *tampu* station.

Lawrence, having taken up a position on an edge overhanging the abyss of the river, set up his camera to film us filing into the blackened mouth of the tunnel. As it was impossible to hear over the reverberations of the 'Great Speaker', we waited for his arm signal, then we moved by him and entered the tunnel. Sunlight poured into its darkened throat. I stopped at the first window openings. Then I suddenly realized that Lawrence had not followed us. I turned back in panic, and not seeing him, flung myself on my stomach to look down below into the churning river. He was nowhere to be seen and I was about to rise and go for the others when I saw him struggling just below me within hand-reach in the branches of a tree. He had fallen and had been caught in a tree growing out of the ledge. There he hung, suspended between heaven and hell. Somehow he had managed to hang on to his camera. This he handed to me, then he climbed up, terribly shaken, to the tunnel-ledge. There was not much more camera work for the rest of that afternoon.

The walls of the tunnel, which was 250 yards long by actual measurement, were pierced with openings to allow in the light and air. Through these 'windows', into which I climbed, I could see the snow-topped peaks of Mount Marcani beyond us. The tunnel had been fashioned by the Incas much as the Romans mined rock. After a fierce fire had been built against it, water was thrown on the hot rock, splitting the friable lime and sandstone. The Incas, with their knowledge of working stone with stone, were presented with no problem. Their daring techniques in engineering were something else. At the end of the tunnel, which had once been connected with a stone stairway cut and built into the rock, we eased across that dangerous cleft and, gaining the circular stairway, went very slowly down the step-road. Cieza de León back in 1543 had had trouble with these same stairways, even when they were in good repair:

'Here the road is so rugged and dangerous, that some horses laden with gold and silver had fallen in and been lost, without any chance of saving them.' Several hundred feet below, we came to what had been the platform, on which we found the remains of the two enormous stone towers or pillars supporting the cables of the bridge. Two hundred feet directly in front of us, across the Stygian gap of the river, we could clearly see the other side of this 'bridge of the . . . Apurimacchaca'. Ciaez had written that it 'was the largest bridge encountered from Cajamarca . . . with the road well built along the sides of the mountains. . . . The Indians who built it must have performed herculean labour. . . .'

No precise data can be given for the bridge's construction. After the year 1300 the Incas expanded their realm to the edge of the Apurimac and about this time, according to their chronicles, Inca Roca, then chieftain, finished the bridge. This would have been *circa* A.D. 1350. The detailed description of its structure is given by the Cuzco-born historian Garcilaso de la Vega, surnamed 'The Inca':

The Apurimac bridge which lies on the royal road from Cuzco to Lima has its pillar support [he called it stirrup] made up of natural rock on the Cuzco side; on the other side [where we were now standing trying to figure it all out] was the stone tower, made of masonry. Under the platform that held this tower, five or six large wooden beams were inserted as thick as oxen—they stretched from one side to another. They were placed one higher than the other like steps. Around each of these beams, each of the suspension cables is twisted once so that the bridge will remain taut and not slacken with its own weight, which is very great.

Until nineteenth-century technology ushered in the use of iron chains for suspension cables, this Bridge of San Luis Rey, hanging by enormous rope-cables across the Apurimac, was one of the largest bridges of its type known. The Incas had no knowledge of the arch, nor, for that matter did any other of the preliterate peoples in America. Depending as it does upon the principles of gravity, pressure, and weight, the arch is yet earthbound and passive, and therefore could not have been used here even had the Incas been familiar with it. Instead, they perfected the principles of the suspension bridge by reversing the arch-curve and giving it wings.

The Bridge of San Luis Rey, like all suspension bridges on the Royal Road, hung from rope cables hand-twisted from the

fibres of the maguey plant. Those of this bridge, of 'the thickness of a man's body', were just laid over the high stone towers for their 'suspending' and then buried in the thick masonry on the platform of the towers. From the suspended cables, supports hung down, and to these the bridge platform made of wood planking was attached. Cables attached to the main bridge served as wind bracing.

Although the materials were primitive, the essential nature of the technology of the Inca suspension bridge is, in principle, the same as the best constructed suspension bridges of to-day. Rope bridges have been built since immemorial times, but few other cultures before the advent of recent eras built so well as the Inca. This particular bridge indeed was so well made that it lasted for five hundred years, the cables, of course, being renewed every two years as a part of their work-service by Indians living at the *tampu* of Cura-hausi. This system of maintenance, so efficacious that the Spanish conquerors maintained it throughout the colonial period, disappeared only after the 'wheel' conquered the Andes, and the bridge which had served as a highway for foot and mule traffic for a period of five hundred years was allowed to fall into slow decay.

The Incas built for eternity: permanence was to them, as it was with the Romans, the base of all their construction. If the Inca road system is here occasionally compared with the Roman road system, it is because, until very recent times, there have been no other communication systems that can be compared with either. Other civilizations had, of course, their highways, but until the advent of the Romans none maintained a road system.

However, structurally an Inca road differed greatly from a Roman road. The Romans employed heavy-wheeled carts with rigid front axles which necessitated a deep road-bed. The Incas, since their roads were travelled only by those on foot and by llama herds, had no need for the road-bed. But apart from this the two civilizations, Inca and Roman, were amazingly similar in their concept of road engineering. While there is no denying Rome's place in civilization's sun, the Incas, living on a neolithic cultural horizon tied to stone tools, still conceived a communication system that stands extremely high in comparison with the Roman.

The Romans had three thousand years of experience to draw on. The facets of Old World thought and techniques regarding

the building of roads are a vast web stretching from the first wagon ruts of ancient India to the stoneways of the Persians. Remote as certain of these areas were, and removed from each other by time and space, the Romans had all these centuries of cultural heritage on which to draw. The Inca had none of these, yet an Inca road is in many aspects superior to a Roman road. Every feature of a Roman road is paralleled in an Inca road except that, for the most part, the Incas built—literally—in the clouds. The Apurimac Bridge, for example, was part of a highway which came from heights the like of which no Roman had ever seen. The passes the Romans conquered were as nothing compared to these in the Andes; Mont Blanc, the highest peak in Europe, is 15,800 feet high; yet here in Peru we have walked over Inca roads *built* at this height. The old Roman roads which crossed the spine of the Italian promontory of the Apennines were no higher than the city of Cuzco, which is 10,200 feet above the sea. Again we turn to our Cieza. As a boy in Spain, he knew the Roman Road. He had walked between Tarragona and Cadiz over the Via Augusta, built in the first century B.C. and rebuilt every quarter of the century by the Caesars. He drove his mules over the Via Argenta, which ran between Mérida and Salamanca—a road which was started by Tiberius, continued by Nero, and fully repaired by Caracalla in A.D. 214—so he and others like him knew what they were saying when they wrote as a general rule that there is ‘nothing in Christendom that equals the magnificence of the Inca roads’.

The remarkable thing is the similarity in approach to the ‘idea’ of roads between the Inca and the Roman. Both civilizations were of the land. Both had land armies, and land armies need roads; and since a road is only a road if one can go back over it, both believed that the road must be well built and well maintained. The Romans, it is true, ruled the straight line into civilization’s thinking, whereas the Inca’s road surmounted obstacles rather than avoided them, and as a general rule their engineers employed what I will call ‘directional straightness’—that is, between two given points their road ran unerringly straight. Caius Caesar personally laid down vast stretches of road, and the Claudian family, when public funds were not available, defrayed expenses for road-building out of its own privy purse. In Peru the road-building programme was also identified with the rulers and the roads were called after the

Inca who built them. For example, one 2,500-mile-long road that ran to Chile was known as Huayna Capac Nan, or the 'Road of Huayna Capac'. Often an Inca would order a road to be built for himself grander than that of his predecessors. The Romans put up milestones as markers, while the Incas built their *topus* 'with the distance between them a Castilian league and a half'. Along their road, the Romans placed night quarters or *mansiones*; in Peru, the Incas erected and maintained *tampus* every four to eight or twelve miles (according to the difficulty and arduousness of the terrain) along the entire route of their roads. Roman couriers had a change of horse-mounts at *mutationes* to hurry up messages along the Imperial Way; the Incas, depending on foot, had their *chasqui* stations every two and a half miles as way-stations for the trained runners who carried messages over the most terrifying terrain in the world.

The bridge, 'the little brother of the road', was ever an important link in the great Inca road system. How many of them there were along the length and breadth of the Andes, we cannot be sure. But of them all, the Apurimac-chaca, the Bridge of San Luis Rey, was the greatest. Few who passed over it did so without pausing to wonder at this miracle of engineering. As to its length, the Inca historian, Garcilaso de la Bega, guessed it to be two hundred paces long—'Although I have not measured it, I have asked many in Spain who did.' Cieza, that most accurate of observers, thought it was 'fifty *estados*' or about eighty-five metres (250 feet) in length. Sir Clements Markham, who crossed it in 1855, estimated the Apurimac-chaca at ninety feet and its elevation above the river's surface at three hundred feet, while Lieutenant Lardner Gibbon, who made a survey of the Amazon for the United States Government in 1817, estimated its length at 324 feet.

When Squier came to the bridge in the summer of 1864, he and his companions lost no time extracting the measuring tapes and sounding lines. They found that the bridge was 148 feet long from end to end and that it was suspended 118 feet above the surging river. That was the first and last time this famous bridge was exactly measured, for although it was still hanging in 1890 it was no longer used and the cables, unreplaced, curved dangerously downward into the gorge and were slowly decaying with time. . . .

The afternoon wind came up loud and shrill, as we were standing on the platform that once held the great suspension

cables of the bridge, to set the foliage that clung to the rock walls rustling. We knew now that an old adage about the wind and the bridge was true, and that when the afternoon winds blew even the wind-braced cables could not hold the bridge steady and it would swing like a hammock.

It was late afternoon by the time we regained the boulder-strewn shores of the river. The sun was lighting the snow-peaks while the shadows of the mountains fell across the canyon. A long shadow falling across the vertical cliffs gave a curious illusion of a hanging bridge. At that moment I must have been very close to the spot where Fra Juniper had stood looking upward at the bridge when a 'twanging noise filled the air . . . and he saw the bridge divide and fling the five people into the river below'.

' "Why did this happen to *those five*?" the Fra asked himself. "If there were any plan in the universe at all, if there were any pattern in a human life, surely it could be discovered mysteriously latent in those lives so suddenly cut out. *Either we live by accident and die by accident* or we live by plan and die by plan." ' With that soliloquy Wilder began his story. It is an ironic truth that if this tragic story had not been written, this wondrous bridge built in 1350 by the Inca Roca, which was to endure for five centuries as one of the greatest tributes to man's domination of wild nature, would have been lost to memory.

With the dying sun now playing fully on the glaciers, the river canyon became as bright as if it were full day. The shadows were gone and, with them, the illusion of the hanging bridge. When I next looked back, there was again only emptiness between the two vertical walls.

MEDITERRANEAN



LIONEL CASSON

MORE SEA DIGGING

(FROM *ARCHAEOLOGY*, Vol. 10, No. 4, WINTER 1957.)

To anyone interested in ancient trade the sea-bed of the Mediterranean would be a veritable library of information, because through the centuries heavily laden merchantmen have foundered on the rocky coasts, and sinking, have taken their cargoes with them. Now, at last the doors of that library are being opened by the new techniques of Sea Digging. In the following article Dr. Lionel Casson describes most vividly some of those ancient wrecks and tells of the great advance in underwater archæology.

JUST before Easter in the year 1900 a group of Greek sponge-divers, returning from their season off Tunisia, ran into a storm and took refuge in a sheltered cove on Antikythera, a little island off the south coast of Greece. To pass the time, some of the crew slipped over the side. When, a few minutes later, one reappeared lugging the bronze arm of a Greek statue, underwater archæology was born.

Its infancy was spectacular. The divers had blundered on the wreck of an ancient ship loaded with works of art; it gave up a harvest of Greek statues that include some of Athens's National Museum's prize pieces. A second ship, discovered some years afterward off the coast of North Africa, also turned out to be loaded with objects of art. Then a long time went by without further reports of underwater finds. In the twenties deep-sea divers fished up some superb Greek bronzes and all the earlier expectations revived. But for various reasons no further efforts were made.

Shortly after the end of World War II a new type of diving apparatus became available. It was a simple affair, consisting of little more than a mouthpiece and a couple of oxygen bottles. A diver so equipped, with a mask to shield his eyes and flippers on his feet to give him drive, could wander about the sea floor for as long as twenty minutes. Underwater secrets were no longer open only to the sponge fisherman or to the

professional deep-sea diver with his expensive and clumsy equipment; any interested amateur was in a position to go after them. A new period of sea digging opened.

The use of the new apparatus—called free-diving to distinguish it from that in which the diver is coupled by an air hose to the surface—found its most enthusiastic practitioners among the French. At first they concentrated their efforts along their own Riviera, and very soon startling reports began to come in of the discovery of numbers of Greek and Roman wrecks. Soon they and others moved farther afield, and wrecks began to turn up along the Italian Riviera, in the straits between Sardinia and Corsica, between Euboea's southern tip and the Greek mainland, and elsewhere. Unlike the first ships discovered, none of these, it turned out, were carrying works of art. They were all merchantmen loaded for the most part with those items that formed so large a part of the commerce of the Greeks and Romans—wine and oil.

We ship cargoes to-day in wooden tubs or barrels, paper cartons, metal drums or the like. In the world of the Greeks and Romans the standard shipping container was the amphora, a large clay jar. Long before any ancient wrecks were discovered we knew a good deal about these containers, since they turned up on land in quantities. We knew that they varied in size and shape from place to place and from century to century, and scholars had even made a good start on the difficult job of identifying which shape and size belonged to which place and time. These jars to-day form the key element in underwater archæology. The wrecks that the free-divers are now locating are not at all like the mental image we commonly have of a romantic hulk lying half-buried in sand; most often all that is left of them is the containers which held their cargoes—a mound of amphoræ jutting up from the sea floor, or an expanse of them strewn over it. When such objects, encrusted with marine growth, are brought to a museum curator, he can hardly be blamed for not displaying them among his treasured pieces. But these prosaic jars have a vital importance of their own.

For years scholars have studied the overseas commerce of the ancient world: what ships went where and with what sort of cargoes. What could be gleaned from the writings of ancient authors and other sources they had long ago collated and studied. Their findings led them to picture a trade that,

although far-flung and brisk, was carried on (except for certain major routes) by smallish vessels which coasted along picking up cargo at dozens of points along the way.

The discoveries of art treasures which I mentioned at the outset and, even more, a haphazard dribble of jars from the nets of Mediterranean fishermen were a steady reminder that valuable clues to the story of ancient commerce were to be found on the sea floor. About 1950 a new epoch opened. Nino Lamboglia, the enterprising Director of Antiquities for the area along the Italian Riviera, talked a salvage expert into a hurried but intensive investigation of a wreck a fisherman had found off Albenga in 1929. About the same time the amateur free-divers began reporting their finds. And then in 1952 Commandant Jacques-Yves Cousteau, the famous explorer of the world under the sea, started a full-scale scientific excavation of a ship that had gone down off the tiny island of Grand Congloué, just outside the harbour of Marseilles. The very first reports were revealing: neither the ship off Albenga nor that off the Grand Congloué was small or loaded with the miscellaneous merchandise that a tramp working the coasts would pick up. Both were big merchantmen, over one hundred feet long, and both were loaded with thousands of wine jars. I had long been studying the history of ancient commerce and I was convinced that these excavations demanded on-the-spot investigation. In 1953 I visited both sites and reported on what I had found. But after that, more and more enticing reports of new finds kept filtering through. This summer I decided to return for another look at the whole field.

'Anything new? Plenty—and not all of it from the Grand Congloué.' Fernand Benoit was speaking—curator of the Musée Borély, the archaeological museum at Marseilles, and a key figure in underwater archaeology to-day. As the Director of Antiquities for Provence and Corsica, all that the sea diggers find falls under his jurisdiction. No museum has a better display of amphoræ and the other objects that turn up in ancient wrecks than the Musée Borély, and no person knows more about them than M. Benoit.

'Here, look at this,' he said, and tossed me a photograph of a rather insignificant-looking jar. 'It's an Etruscan amphora,' he added with satisfaction. 'It's from a wreck found off the Cap d'Antibes; there are fragments of over forty jars. Sixth-century

B.C.—the earliest wreck identified yet. There's no doubt that the Etruscans were trading in this area at that time; we've found their pottery in many places in southern Gaul. But come with me; I've got more to show you.'

He led me to a room where, in a fine new display, were objects chiefly from the Grand Congloué wreck: bits of bronze ship's fittings; a box made of lead; masses of Campanian pottery. On the wall was a sketch showing the exact position of the wreck and how the divers worked on it. In the same display case was a unique find—a hoard of bronze coins that, through the action of water, had fused into one solid mass; it was fished up in the bay off Ciotat (east of Marseilles) and may have come from a wreck or may merely have been lost overboard. From there he led me to the museum's 'maritime history room'. One wall was covered with examples of the various types of jars from the Grand Congloué wreck; there are upwards of two thousand more in storage and perhaps several thousand more still on the sea bottom. On the other walls were specimens from other wrecks found along the Riviera. For some reason the first century B.C. is especially well represented and there were many tall slender amphoræ of this period. But there were also plenty of others: wide-necked jars and narrow-necked ones, tubby jars and tall ones—almost an inventory of the many shapes we know.

All this material Benoit has arranged, analysed and given preliminary publication. The prize, of course, is the wreck off the Grand Congloué, and a good deal more is known about it now than when I made my first visit four years ago. The chief items in her cargo were, first, a consignment of tubby Græco-Italic amphoræ which, along with a shipment of Campanian pottery, were stored in the hold and, second, a swinging load of Italic wine jars stowed upright on the deck, precisely as we see them in pictures of ancient merchantmen. Over seventeen hundred of these last have been recovered. Their insides had been smeared with resin to prevent seepage and many still retained their plugs, a piece of cork topped by a clay stopper. On the outside of the lip they bore the name of the man who had shipped them: *SES* (an abbreviation for *Sestius*) followed by his company's device, a trident or an anchor. The *Sestius* family apparently had a long career in the shipping business, for amphoræ bearing their name have turned up in many places dating over a considerable span of years. Almost certainly,

to judge by the fabric of the jars and by the presence of Campanian pottery, the wine was shipped from South Italy and was probably intended for distribution to the interior from Marseilles. In some instances we know from whom Sestius bought the wine: the wine-seller stamped his name on the stoppers, and on a few of them can still be read L. TITI. C.F. (Lucius Titius, son of Caius).

Though the wreck off the Grand Congloué is the greatest single contributor to the Musée Borély, it is not the only one. To date Benoit has been able to confirm the existence of at least seventeen wrecks lying between Marseilles and the Italian border, ranging in time from the sixth century B.C. to the fourth century of our era. But miscellaneous finds which keep coming in indicate that this figure will soon have to be raised.

On still another score Benoit had interesting progress to report. Every ancient ship carried several anchors. Divers have recovered a good many, and the museum has a rich collection. The part the divers usually find is the stock—a long heavy bar either completely of lead or a wooden core sheathed in lead, fitted to receive the shank. The shank itself and the flukes were usually of wood and are only rarely recovered. Not all the stocks are alike and one particular form has led Benoit to conclude that it was the ancients who first invented the anchor with a movable stock, a convenient feature which enables sailors to lay the whole contraption flat on the deck and out of the way when not in use. In medieval times it apparently went out of existence and was unknown until the British re-invented it a century ago.

'We haven't found anything startlingly new since you were here last, but we've turned up a good many interesting things.' The speaker this time was Henri Broussard, Secretary of the *Club Alpin Sous-Marin* at Cannes. The club is the most important organization of its kind in France. All serious divers are members, and it is they who have investigated most of the wrecks along the French Riviera, as well as a good many elsewhere. M. Broussard, a skilled diver and expert underwater photographer, after a few preliminary remarks launched into one of his favourite topics: the wrecks of the *Balise de la Chrétienne*.

A little west of Cannes, at the point where the village of Agay rubs shoulders with Anthéor, a buoy called the *Balise de la Chrétienne* marks a particularly dangerous spot along this rocky coast. Diving here in 1948, Broussard came across what

appeared to be a field of amphoræ. After a great many dives and careful investigation it was determined that there were three distinct wrecks in the vicinity.

For lack of better names the wrecks were dubbed A, B, and C. Not much could be gleaned from the last two: C was carrying tubby jars which may have been used for olive oil and are probably of the second century B.C., while B held wine jars of the first century A.D. Wreck A had a good deal more to offer. Its amphoræ were of the tall, slender, first-century B.C. type that turns up so frequently along the Riviera. Lying on the sea floor, they outlined the shape of the vessel, and Broussard estimates that it was about a hundred feet long. In 1954 the divers came upon a unique find, the stock of the ship's anchor with a piece of the wooden shank still fixed in it. This established beyond question that the vessel was a big fellow. The stock is one of the largest ever recovered, a massive piece of lead over six feet long and weighing nearly seven hundred pounds. The remnant of its shank was $8\frac{1}{2}$ inches wide, 7 inches thick, and $33\frac{1}{2}$ inches long; originally it was at least twice as long.

The vessel had been carrying a cargo of wine (although a few oil jars were also found). Their stoppers had been stamped with the name of the wine seller: M. C. LASS—probably M(arcus et) C(aius) Lass(ius). Lassius is a name that was common in the area about Naples in the first century B.C. The ship, then, like that off the Grand Congloué, had very likely been transporting a big load of South Italian wine to southern France when it came to grief. Some of the wood from the hull was recovered, notably a rib which revealed the craftsmanship of the ancient shipwright in pinning planks to frame. Pegs held the two together, and to make sure the pegs fitted snugly, copper nails had been driven through them, forcing them to expand in their holes. Some tools from the ship's carpenter's chest were preserved in a curious way. Two formless chunks of corroded iron discovered in the wreck, when broken open, were found to contain perfect moulds of what they had been originally: one of a hatchet, the other of an adze. Even the piece of the wooden helve of one was preserved.

When sea digging is mentioned one almost automatically thinks of the French Riviera, but this region is far from having a monopoly of ancient wrecks. At least two have been identified

along the Italian Riviera, the one off Albenga and another, of the second century B.C., off Pegli near Genoa. Divers have discovered that the floor of the straits between Corsica and Sardinia is strewn with jars. And of course there are wrecks in the eastern Mediterranean as well. But in this area I discovered a paradox: a good deal of the investigating must be done on land.

In 1955 a report was published that a wreck of the fifth century B.C. had been located off the island of Chios. So I stretched my itinerary to include this island. I quickly discovered that there was little more to add to the published notice. The wreck was in bad shape; only some fragments of jars had been recovered, just enough to prove that they were definitely of the fifth century.

This, however, was not the end of the trail on Chios. Before going there I had a long conversation in Athens with Virginia Grace, the acknowledged expert on Greek amphoræ. She informed me that the wreck reported off Chios was only one of many, assured me that there was a harvest of jars to be found on the island, and gave me clues as to where to do my searching. In the little museum at Chios I came upon a helter-skelter collection of amphoræ encrusted with marine growth. But outside the museum the finds were richer. The local fishermen use the dragnet, the type pulled in such a way that it brushes the bottom. It's hard on the fish—the grounds are gradually becoming exhausted—but it's wonderful for bringing up jars. The Chians prize these relics of their past: they set them out in their gardens, or use them as ornaments in their houses. Finding them is simply a matter of looking over garden walls and knocking on the doors of fishermen's houses. In one fishing village I got the impression that there was at least one jar in every home, and one house I visited had four, one adorning each room.

The varied shapes of these amphoræ show that they span the centuries from the fifth century B.C. to the late Roman Empire; the waters about the island must literally teem with wrecks. But Miss Grace assures me that Chios is not unique; She has been over most of the islands of the *Ægean* and the Eastern Mediterranean and has come across jars on practically all of them. There are clearly many, many wrecks to be found; merely to pinpoint them and explore only the most promising would require time, energy, organization, and money on a staggering scale.

Thus underwater archæology has one job before it which doesn't involve sea digging at all, namely the collating and study of all these amphoræ that turn up so haphazardly. Miss Grace is doing this for the east, Benoit and Lamboglia for parts of the west. This work is, of course, far less expensive and time-consuming than sea digging itself. Yet in a way it is almost as important, for it can help establish the date, the use, and the provenience of the various shapes. Once such problems are solved, divers will be in a position to identify quickly and precisely what they discover.

The immediate future of actual underwater exploration unquestionably lies along the French and Italian Rivas. Here the sea diggers have already accomplished enough to give a vivid picture of the nature of ancient commerce and of the ships used in it. The coastal area from Italy to Marseilles was a waterway for international commerce as early as the sixth century B.C., and by the second B.C. it was clearly the scene of traffic on a large scale. In this and the subsequent century ships one hundred feet in length and more, capable of carrying upwards of two hundred tons of cargo, travelled this route, transporting huge quantities of Italian wine—the wreck off Grand Congloué carried perhaps fifteen thousand or twenty thousand gallons—and much Italian olive oil and pottery to the south coast of France.

We know less about succeeding centuries, but there is every chance that the sea diggers will soon fill in this gap. Although work on the Grand Congloué wreck has virtually stopped, there is an exciting new prospect to take its place. At the north-east tip of the Île du Levant (in the Hyères group) is a beacon called 'the Titan' which warns ships away from a dangerous reef. Here was found a well-preserved wreck loaded with amphoræ from the age of Augustus. Many were still plugged with clay stoppers, and in some of the jars were found remains of tunny bones and of molluscs which had been preserved in fish sauce. Within the near future Phillip Tailliez, commanding officer of the *Groupe d'Études de Recherches Sous-Marines* attached to the naval base at Toulon, will start a full-scale investigation. His chances are bright indeed, for he has at his disposal the *Élie-Monnier*, a ship specially equipped for underwater research. There is some urgency because the wreck is easily reached and enthusiastic amateur diggers have been helping themselves to the jars.

Some of the high hopes raised earlier for underwater archæology are probably not to be realized. When Cousteau started to investigate the Grand Congloué wreck, he talked optimistically of raising the hull itself and giving the world its first look at a Roman merchantman. This is probably not to be. One of the serious problems connected with sea-digging is the preservation of the pieces of wood that are brought up, for they deteriorate rapidly on exposure to air. At an international congress (1955) devoted to underwater archæology a good part of one session was devoted to this topic, but no satisfactory conclusions were reached.

The technical side of underwater archæology has made tremendous strides in the past years. Divers now have powerful lamps to illumine the work, effective suction cleaners to remove the marine growth and much that cling to wrecks, devices to raise heavy finds to the surface. They have worked out techniques to plot the exact location of the various parts of a wreck and to set out markers so that a wreck, once found, will not have to be searched for all over again.

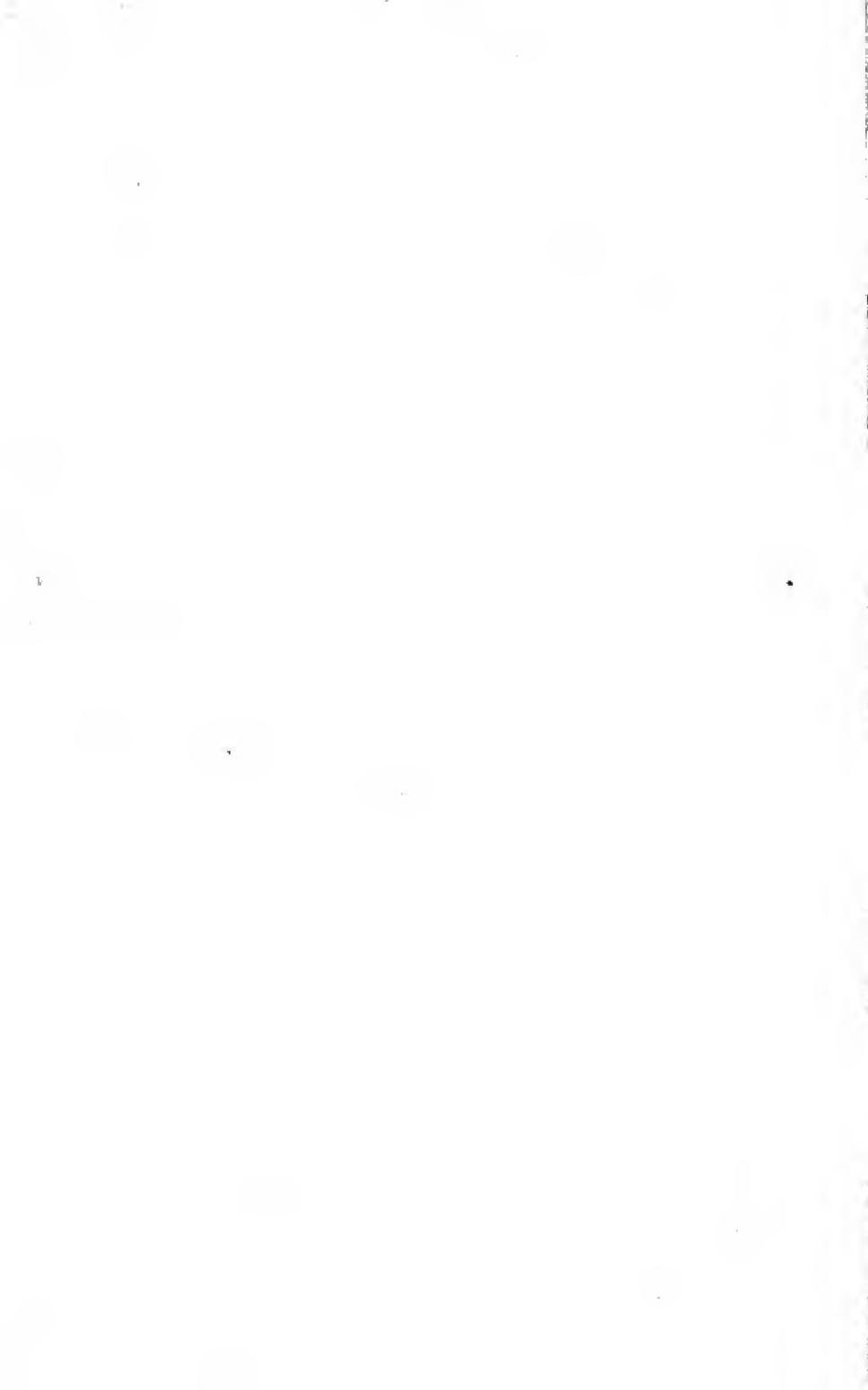
Underwater photography has made remarkable progress. Movies and still shots in black and white or colour record with dramatic clarity what lies on the floor of the sea. I was lucky enough to be present at a demonstration of how far the art of taking pictures under water had advanced—a live television of sea diggers at work on the Grand Congloué, arranged by Commandant Cousteau.

When I visited the Grand Congloué in 1953 it was the epitome of barrenness and loneliness, just an oversized naked white rock projecting above the surface of the sea. This time, as the launch rounded a point and the island came into sight, the changes were almost unbelievable. Over the spot where the wreck lay were anchored the two famous French underwater research ships, Cousteau's *Calypso* and Taillicz's *Élie-Monnier*. On one end of the island a veritable Eiffel Tower had been built; the rest was swarming with people and covered with a clutter of cables, generators, cameras, and the other paraphernalia needed for a television broadcast. The broadcast was a triple-barrelled affair: Cousteau had arranged to do it first in English, then in Italian, and finally in French. While the technicians, the director, and other personnel did their part ashore and on deck, down on the sea-floor diving-excavators worked on the wreck. Around them swam men

carrying powerful lamps, and behind were the cameramen, tracking the work with their lenses. I watched the first broadcast on the spot, then raced to a set on shore to see the third on the screen. It went off without a hitch; Cousteau had attempted a daring experiment and carried it off brilliantly.

A copy of the English broadcast was made on film, and it may be shown in America. I hope it will. Its short minutes give, as no words can, a fascinating glimpse of the promise of underwater archæology—and a sobering realization of its expense and limitations.





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